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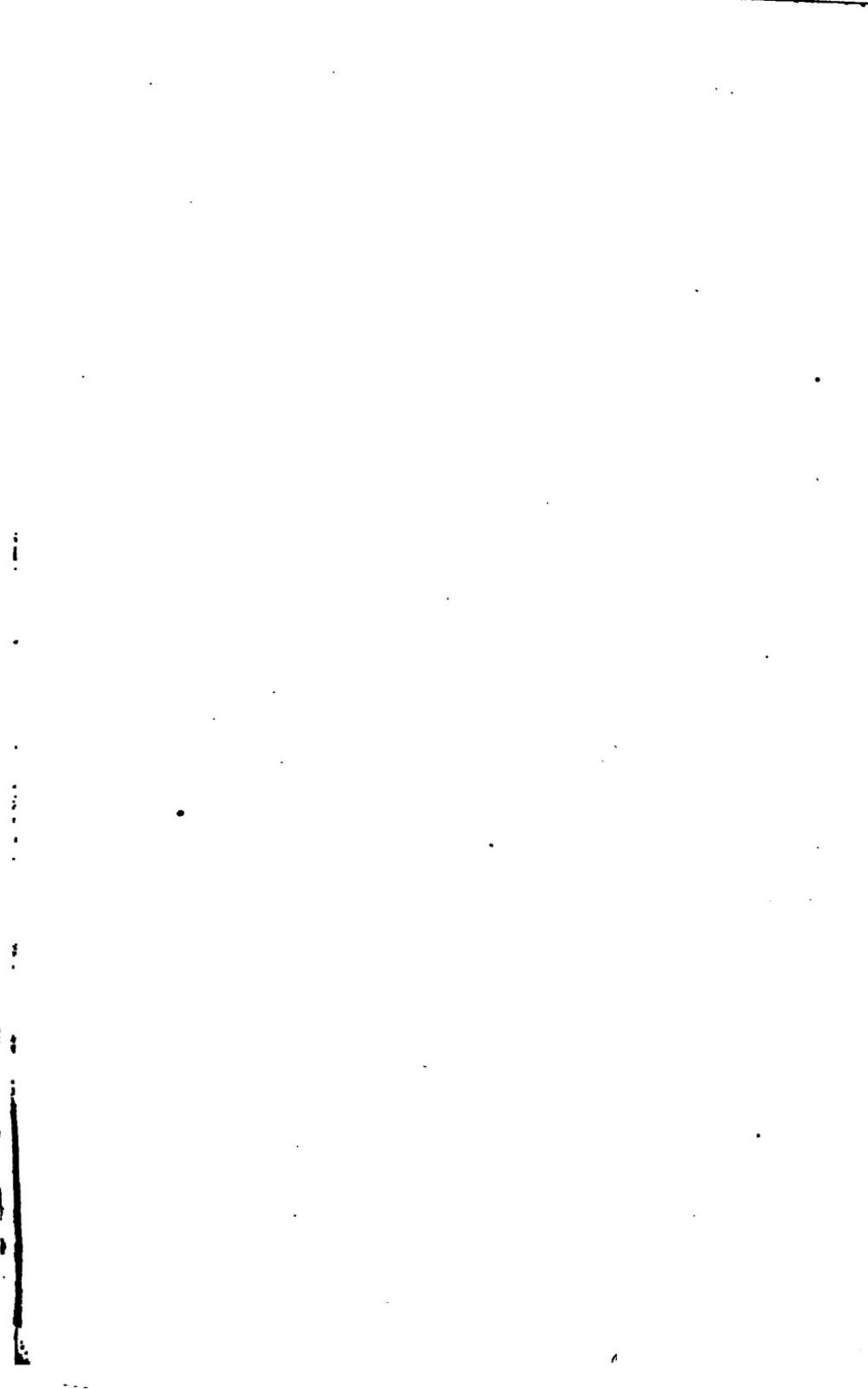
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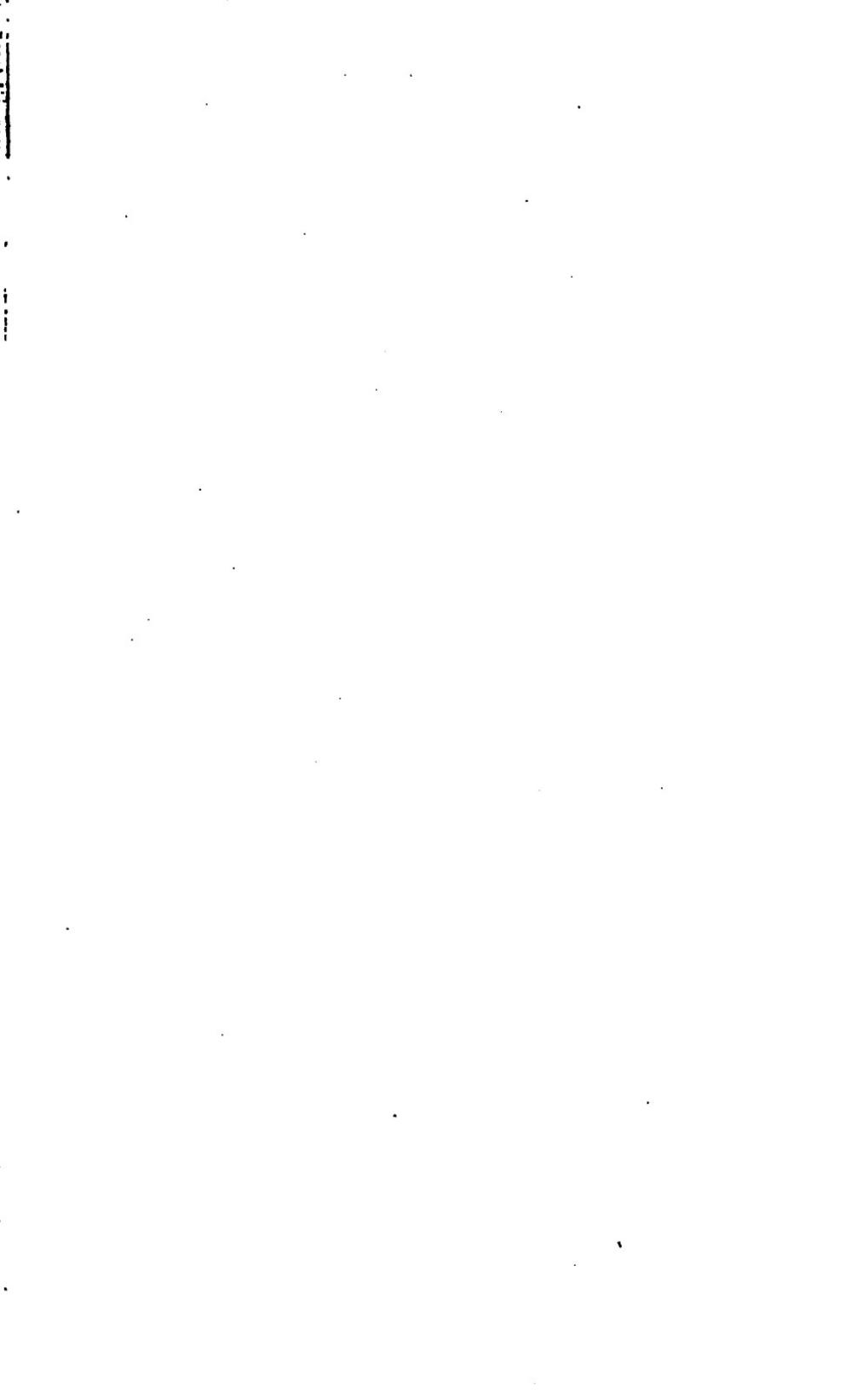
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PROCEEDINGS

OF THE

American Pharmaceutical Association

AT THE

EIGHTEENTH ANNUAL MEETING,

HELD IN



CONSTITUTION AND ROLL OF MEMBERS.

PHILADELPHIA:
SHERMAN & CO., PRINTERS.
1870.





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LIST OF QUERIES

TO BE REPORTED ON AT THE NINETEENTH ANNUAL MEETING.

1. Are the preparations of Rennet identical with those of pepsin, and can the former be prepared only from the fourth stomach of the calf?

Accepted by Clemmons Parrish, of Philadelphia.

2. How may Camphor be reduced to a fine powder, and retained in the pulverulent condition?

Referred to John C. Loud, of Boston, Mass.

3. An examination of the Extracts of Meat of commerce. What is the actual nutritive value of the preparations, and how do they compare one with another?

Accepted by Albert E. Ebert, of Chicago.

4. What proportion of mercury is contained in the Blue Pill of the market?

Accepted by Charles H. Bassett, of Boston.

5. What is the quality of Beeswax of the market, and what are the best means of detecting its adulterations?

Accepted by John J. Thomsen, of Baltimore.

6. To what does Poke Root (*Phytolacca Radix*) owe its activity? Can the active principle be isolated?

Accepted by J. F. Hancock, of Baltimore.

7. Ammonio-Citrate of Bismuth loses its solubility to a great extent by age. Can any other salt of bismuth replace this in the desirable quality of solubility, and at the same time be more stable in composition?

Accepted by Prof. George F. H. Markoe, of Boston.

8. To what extent are the Essential Oils adulterated or sophisticated? How may impurities be detected?

Accepted by William S. Thompson, of Baltimore.

9. Glycerine of various grades is furnished by the manufacturers. In what respect do they differ? What are the usual impurities of glycerine, and what are the best practical tests?

Accepted by Joseph P. Remington, of Philadelphia, Pa.

10. What is the best practical method for making Suppositories extemporaneously?

Accepted by R. B. Ferguson, of Washington, D. C.

11. Is a liquid preparation of Hydrate of Chloral desirable? If so, what is the best vehicle to preserve it from change, and render it agreeable for administration?

Accepted by Prof. George F. H. Markoe, of Boston.

12. Pancreatic Juice has been highly recommended to assist the assimilation of fat in the human stomach. In what manner is the fluid obtained, and what permanent preparation of it can be made that will be suitable for administration?

Accepted by J. H. Hancock, of Baltimore, Md.

13. To what extent are the oils of peanut, cotton-seed, mustard-seed, or others, sold for Olive Oil? And how can they be readily detected when so substituted?

Accepted by H. N. Rittenhouse, of Philadelphia, Pa.

14. What is the active principle of Wahoo Bark (*Euonymus atropurpureus*)?

Accepted by Charles E. Dohme, of Baltimore.

15. Are the California Wines and Brandies suitable for medicinal use? Are the wines and brandies now supplied to the Atlantic cities from California as good as can be obtained from that source?

Accepted by William Searby, of San Francisco.

16. What system of apprenticeship to Pharmacy is adaptable to this country? What amount of preliminary education should be required of such apprentices, and what means should be employed to render their apprenticeship profitable to themselves and satisfactory to their preceptors?

Accepted by S. M. Colcord, of Boston.

17. What quantity of Castor Oil is produced annually in the United States, and to what extent is the American oil put up in packages and sold in imitation of the East India Oil?

Referred to Francis X. Crawley, of St. Louis, Mo.

18. To what extent may traffic in Fancy Goods, Liquors and Cigars be regarded as compatible with legitimate Pharmacy?

Accepted by Samuel Campbell, of Philadelphia, Pa.

19. Tincture of Blood-root deposits a sediment upon standing. Is the activity of the preparation thereby impaired, and is there a more suitable alcoholic strength for this tincture?

Accepted by Louis Dohme, of Baltimore, Md.

20. Does the commercial Subcarbonate of Iron of the market conform to the requirements of the United States Pharmacopoeia? If not, in what respect does it differ?

Accepted by P. W. Bedford, of New York City.

21. Granulated Effervescing Compounds are sold by druggists under popular names, and the demand for them is constantly increasing, yet these compounds are known to be different from the preparations represented by the labels. Give a practical process for the preparation of such as are believed to possess merit.

Accepted by Samuel Campbell, of Philadelphia, Pa.

22. Is Tincture of Opium as usually dispensed uniform in morphia strength? What range is covered by the differences existing in samples obtained from reputable sources?

Accepted by L. M. Rice, of New York City.

23. What are the best containers, or what other precaution can be devised for Poisonous Drugs, to lessen the liability to mistakes in dispensing or handling them?

Accepted by W. C. Bakes, of Philadelphia.

24. The purity of commercial Tartar Emetic has been questioned. To what extent, if at all, is the article impure, and in what respect does it usually fail to conform to the officinal standard?

Accepted by Joseph P. Remington, of Philadelphia, Pa.

25. What medicinal articles are in popular use among the Indian tribes, and what properties are ascribed to such as are unknown to commentaries?

For general acceptance.

26. Is there a practicable and cheap process of isolating Cantharidin? And in what proportion should it be substituted for Cantharides in the various vesicating preparations?

Accepted by Albert E. Ebert, of Chicago.

27. An article has been introduced into the market under the name of African Saffron. What is its source and botanical history?

Accepted by John M. Maisch, of Philadelphia.

28. Spirit of Nitrous Ether varies greatly as obtained from different manufacturers. By what practical process may the proportion of Nitrous Ether in the spirit be estimated, and is the alcoholic strength of the United States Pharmacopœia a proper one?

Accepted by F. Mahla, of Chicago.

29. The Aromatic Sulphuric Acid of the United States Pharmacopœia is objectionable, in that it deposits upon standing, and when diluted with water, resinous and coloring matter separates. How can the formula be modified to overcome these objections?

Accepted by Thomas Doliber, of Boston, Mass.

30. Medicated and Aromatic Waters prepared by rubbing essential oils with Carbonate of Magnesia, are found to contain soluble salts, derived from the magnesia. What substance can be substituted for the magnesia that will furnish a water free from foreign matter?

Accepted by S. A. D. Sheppard, of Boston, Mass.

31. What proportion of Magnesia is contained in the solutions of Citrate of Magnesia as obtained from different sources, and how do these solutions differ from the officinal?

Accepted by Prof. George F. H. Markoe, of Boston.

32. In what respect does deodorized Tincture of Opium differ from the "Elixirs" of Opium in the market? The tincture prepared by the United States Pharmacopœia process gradually deposits a dark-colored sediment. Are any of the active principles thrown down in connection with the deposit?

Accepted by Charles E. Dohme, of Baltimore, Md.

83. What is the comparative value of Carbolic Acid, and other disinfectants and antiseptics? Which are the best disinfectants for general use?

Accepted by Edward C. Jones, of Philadelphia.

84. Prof. Wormly has isolated two active principles from the yellow Jessamine (*Gelsemium sempervirens*); one of which he calls Gelsemina, and the other Gelseminic acid. How may these principles be isolated in quantity? What is the antidote to the poisonous effects of this drug?

Accepted by Joseph M. Hirsh, of Chicago.

85. Is the ordinary commercial Alcohol of the market sufficiently free from fusel or grain oil for pharmaceutical use?

Accepted by N. Peirpoint, of Young America, Illinois.

86. It is found that ordinary menstrua do not hold the polygalic acid of Senega in solution, and that well-made fluid extracts of Senega from good specimens of the drug are liable to gelatinize in cold weather. What menstruum is best adapted to use for holding all the active principles of Senega in permanent solution, and excluding pectin and other useless substances?

Accepted by H. N. Rittenhouse, of Philadelphia, Pa.

87. What is the best formula for Solution of Citrate of Magnesia? Can a permanent solution of it be made?

Accepted by E. H. Sargent, of Chicago.

88. What is the mode of action of "Insect Powder," the flowers of Pyrethrum caucasicum or roseum, as an insecticide? And is there an American plant that possesses a like power?

Continued to S. S. Garrigues, of Saginaw, Mich.

89. Eupatorium perfoliatum. An examination of its proximate principles, especially that to which its bitterness is due.

Continued to Joseph Hirsh, of Chicago.

40. Is not the proportion of Acetic Acid used in the process of the United States Pharmacopeia for acetic extract of Colchicum too large? And to what extent may it be reduced?

Continued to Edward C. Jones, of Philadelphia.

41. It has been proposed to substitute glycerine for sugar as a solvent and antiseptic in fluid extracts. Does this ingredient in quantity affect their medicinal power in any way?

Continued to W. J. M. Gordon, of Cincinnati.

42. Pepsin is valued for its medicinal power in connection with disordered digestion. What are the best sources of, and what is the most available process for the preparation of it for medicinal use and for the cuisine?

Continued to S. Mason McCollin, of Philadelphia.

43. The cold infusion of commercial Wild Cherry Bark sometimes varies considerably in color. Is this due to the time at which the bark is collected, or to what other cause?

Continued to Joseph L. Lemberger, of Bethlehem, Pa.

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PREFATORY NOTICE.

ALTHOUGH this volume is published at about the same time of the year as the one preceding it, it is far behind the time at which its publication was expected by the Editor and by the Executive Committee. It is an exceedingly unpleasant duty to be annually compelled to apologize for such delays, and when one cause is removed to be hindered by another. The Proceedings might have been in the hands of each member at least four weeks sooner, if the various reports had been in the hands of the Editor at a proper time. The first instalment of the phonographic report did not arrive until October 27th, and the last not before the 23d of November.

The reports of committees were likewise behind time, compelling the Editor to reverse the usual order of the various papers in order to avoid further delay. The sickness of the reporters or their families, we trust, will be regarded by the members as a sufficient excuse for the delay this year.

The names of a number of members had to be left off from the roll, they not responding either to the Treasurer's or Secretary's appeal to comply with the By-Laws. One or two members dropped in former years were restored on the roll. It must be obvious to all that only a scrupulous compliance of every member with the rules can enable the Association to meet its obligations, and with the extending usefulness and influence of the Association this duty becomes more and more imperative.

Orders for copies of the Proceedings should be directed to the Permanent Secretary. The various issues are held at the following prices *exclusive of postage or express charges*:

1851, 1852, 1853, 1855,	unbound,	\$0.25	each.
1857,	"	0.40	bound, \$0.70.
1858, 1859,	"	1.20	" " 1.50 each.
1860,	"		" 1.00.
1862, 1868,	"		" 1.25 "
1864, 1865, 1866,	"	1.20	" 1.50 "
1867,	"	2.00	" 2.80.
1868, 1869, 1870,	"	2.25	" 2.50 "
1854 and 1856,	out of print;	none published in 1861.	

The entire set of bound volumes, the first four in paper covers, will be furnished at \$21; the set of unbound volumes, including the bound ones for 1860, 1862, 1868, are held at \$18.

The Nineteenth Annual Meeting of the Association will be held in the city of St. Louis, Mo., on the second Tuesday of September, 1871.

THOMAS S. WIEGAND,
Chairman of the Executive Committee, 528 Arch St., Philadelphia.

JOHN M. MAISCH,
Permanent Secretary, 1607 Ridge Avenue, Philadelphia.

MINUTES

OF THE

EIGHTEENTH ANNUAL MEETING.

First Session.—Tuesday, Sept. 13th, 1870.

The Eighteenth Annual Meeting of the American Pharmaceutical Association convened in the Lecture-room of the University of Maryland, Lombard corner of Greene Street, in the City of Baltimore, Md., on the 13th day of September, 1870, at 3 o'clock P.M. President E. H. Sargent in the chair. John M. Maisch, Secretary.

After calling the meeting to order, the President made the following remarks :

I wish to announce, before proceeding to the regular business of the session, that the British Pharmaceutical Conference will assemble at 8 o'clock, to-day, in the city of Liverpool. This concurrence in the time of meeting of two kindred associations, in different and widely separated nations, would seem to render appropriate, something more than a formal recognition of the fact, and to call for some expressions of our interest in an Association having the same aims as our own, and speaking the same language.

The following gentlemen were appointed by the President, a Committee to examine Credentials : William S. Thompson, of Baltimore, James T. King of Middletown, N. Y., and Newton Peirpoint, of Young America, Ill. The committee retired, and after consultation, presented the following report :

BALTIMORE, Sept. 13th, 1870.

To the President and Members of the American Pharmaceutical Association.

The Committee on Credentials, appointed to report the names

of the delegates appointed to attend the Eighteenth Annual Meeting, respectfully report the following delegations:

Massachusetts College of Pharmacy.—Samuel M. Colcord, George F. H. Markoe, Robert R. Kent, Joel S. Orne, Benjamin F. Stacey.

College of Pharmacy of the City of New York.—P. Wendover Bedford, George C. Close, Isaac Coddington, David Hays, William Neergaard.

Philadelphia College of Pharmacy.—William Procter, Jr., Joseph P. Remington, Alfred B. Taylor, James T. Shinn, Henry N. Rittenhouse.

Maryland College of Pharmacy.—George W. Andrews, Oscar Monsarrat, N. Hynson Jennings, Louis Dohme, John F. Hancock.

Chicago College of Pharmacy.—Albert E. Ebert, Thomas Whitfield, Newton Peirpoint, Dr. F. Mahla, E. H. Sargent.

California Pharmaceutical Society.—William T. Wenzell, William A. Perkins.

New Jersey Pharmaceutical Association.—Joseph L. De la Cour, Jr., Randall Rickey, William Rust, Edward F. Kelley, Julius Fehr.

Newark Pharmaceutical Association.—John B. Lee, Ransford W. Vandervoort, Alexander Havenstein, Charles W. Badger, Edward P. Nichols.

Alumni Association of the Philadelphia College of Pharmacy.—Charles L. Jefferson, Joseph A. Souder, S. Mason McCollin, P. Joseph L. Carberry, Clemmons Parrish.

Alumni Association of the Massachusetts College of Pharmacy.—Judson R. Cheney, Thomas Doliber, John C. Lowd, Charles A. Tufts, Abijah B. Warfield.

Respectfully submitted,

(Signed) W.M. S. THOMPSON,
 N. PEIRPOINT,
 JAMES T. KING.

Mr. William Wright, Jr., on behalf of the Executive Committee, reported the applications for membership from the fol-

lowing gentlemen, they having complied with the requirements of the Constitution:

<i>Alabama.</i>	<i>Missouri.</i>
Charles G. Parker, Mobile.	F. Smith Glenn, St. Louis.
<i>Arkansas.</i>	<i>New Jersey.</i>
William H. Naulty, Little Rock.	Thomas J. Barnaby, Elizabeth.
<i>Canada.</i>	<i>New York.</i>
Wolfred D. E. Nelson, Montreal.	James Otis Barnaby, Brooklyn.
<i>Cuba.</i>	John W. Cutler, Albany,
John F. Cahill, Cardenas.	Theodore W. Buete, Lockport.
<i>District of Columbia.</i>	H. S. Sherwood, Poughkeepsie.
Z. W. Cromwell, Washington.	William Hull Wickham, New York.
J. D. O'Donnell, "	<i>Ohio.</i>
<i>Delaware.</i>	Alfred Bitson, Columbus.
Linton Smith, M.D., Wilmington.	<i>Pennsylvania.</i>
<i>Illinois.</i>	William H. Egle, M.D., Harrisburg.
Judson S. Jacobus, Chicago.	Clarence A. Evans, Muncy, Lycoming Co.
Hosea W. Palmer, Hyde Park.	Albert R. Griffith, Oil City.
<i>Kentucky.</i>	James M. Hedenberg, Danville.
James E. Brown, Louisville.	Charles M. Hostetter, Pittsburg.
Simon N. Jones, "	Alfred A. Hubley, Lancaster.
Peter Nodler, Covington.	John F. Huddart, Philadelphia.
<i>Louisiana.</i>	William Krause, "
Joseph T. Thibodeaux, Thibodeaux.	Eugene A. Rau, Bethlehem.
Paul L. Viallon, New Orleans.	William Trindle, Philadelphia.
<i>Maryland.</i>	<i>Tennessee.</i>
A. W. Duke, Baltimore.	Frank L. Steele, Memphis.
F. A. Gräfle, Hagerstown.	<i>Virginia.</i>
John H. Hancock, Baltimore.	Marshall C. Hall, Fredericksburg.
Edward A. Smith, "	A. W. Nolting, Richmond.
John A. Webb, "	

The President appointed Messrs. P. W. Bedford, of New York, and E. McC. Boring, of Philadelphia, tellers, who reported the unanimous election of the candidates.

The Secretary called the roll, those present answering to their names. The following list contains the names of all the members present at this and any of the subsequent sessions.

Matthew F. Ash, Jackson, Miss.	Aug. R. Bayley, Cambridgeport,
Chas. W. Badger, Newark, N. J.	Mass.
J. Brown Baxley, Baltimore, Md.	P. W. Bedford, New York.

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| Henry M. Billings, New York. | John A. Milburn, Washington, D. C. |
| E. McC. Boring, Philadelphia. | Edward L. Milhau, New York. |
| Ferris Bringhurst, Wilmington. | J. B. Moore, Philadelphia. |
| Elijah Button, Annapolis, Md. | J. Faris Moore, Baltimore. |
| Samuel Campbell, Philadelphia. | T. C. Murray, Washington, D. C. |
| P. Jos. L. Carberry, " | William Neergaard, New York. |
| George C. Close, Brooklyn, N. Y. | Edward P. Nichols, Newark, N. J. |
| Isaac Coddington, New York. | J. D. O'Donnell, Washington, D. C. |
| Samuel M. Colcord, Boston. | Joel S. Orne, Cambridgeport, Mass. |
| Z. W. Cromwell, Washington, D. C. | Clemmons Parrish, Philadelphia. |
| J. L. De la Cour, Camden, N. J. | Newton Peirpoint, Young America,
Ill. |
| Charles E. Dohme, Baltimore. | W. A. Perkins, San Francisco, Cal. |
| Louis Dohme, " | Alex. C. Peters, Newark, N. J. |
| A. W. Duke, " | Wilson H. Pile, M.D., Philadelphia. |
| Chas. L. Eberle, Philadelphia. | Robert Platzer, " |
| Albert E. Ebert, Chicago. | William Procter, Jr., " |
| Wm. H. Egle, M.D., Harrisburg, Pa. | William H. Raser, " |
| Evan T. Ellis, Philadelphia. | Joseph P. Remington, " |
| Columbus V. Emich, Baltimore. | L. M. Rice, New York. |
| Clarence A. Evans, Muncy, Pa. | Randall Rickey, Trenton, N. J. |
| Julius Fehr, Hoboken, N. J. | Henry N. Rittenhouse, Philadelphia. |
| Fleming G. Grieve, Milledgeville, Ga. | Daniel C. Robbins, New York. |
| Marshall C. Hall, Fredericksburg,
Va. | Joseph Roberts, Baltimore. |
| J. F. Hancock, Baltimore. | William Rust, New Brunswick, N. J. |
| C. W. Hancock, Philadelphia. | Richard Sappington, Baltimore. |
| Alex. Havenstein, Newark, N. J. | E. H. Sargent, Chicago. |
| Henry Haviland, New York. | William Saunders, London, Can. |
| David Hays, " | A. P. Sharp, Baltimore. |
| Charles A. Heinitsh, Lancaster, Pa. | H. S. Sherwood, Poughkeepsie, N. Y. |
| Fred. Hoffmann, New York. | James T. Shinn, Philadelphia. |
| W. F. Horton, Boston. | R. M. Shoemaker, " |
| J. B. H. Jefferson, Philadelphia. | Giles G. C. Simms, Washington, D.C. |
| N. H. Jennings, Baltimore. | Charles B. Smith, Newark, N. J. |
| Edw. C. Jones, Philadelphia. | Edward A. Smith, Baltimore. |
| Ed. F. Kelley, Newark, N. J. | J. Jacob Smith, " |
| Robert R. Kent, Boston. | J. A. Souder, Philadelphia. |
| James T. King, Middletown, N. Y. | E. R. Squibb, M.D., Brooklyn. |
| T. E. Kirby, M.D., Baltimore. | R. H. Stabler, M.D., Alexandria, Va. |
| Charles W. Kitchen, Brooklyn, N. Y. | Benj. F. Stacey, Charlestown, Mass. |
| Rob't. Lautenbach, M.D., Baltimore. | Daniel B. Street, Annapolis, Md. |
| John B. Lee, Newark, N. J. | Alfred B. Taylor, Philadelphia. |
| Joseph L. Lemberger, Lebanon, Pa. | William S. Thompson, Baltimore. |
| John M. Maisch, Philadelphia. | John J. Thomsen, " |
| George F. H. Markoe, Boston. | Charles A. Tufts, Dover, N. H. |
| S. Mason McCollin, Philadelphia. | John A. Vandegrift, Burlington,-
N. J. |
| J. A. Meyers, Columbia, Pa. | |

William H. Voorhees, Plainfield, N. J.	William H. Wickham, New York.
A. B. Warfield, Boston.	C. N. Wills, Philadelphia.
William T. Wenzell, San Francisco.	Jonas Winter, Hagerstown, Md.
Thomas Whitfield, Chicago.	J. A. Wolf, Baltimore, Md.
F. T. Whiting, Great Barrington, Mass.	William Wright, Jr., New York.

The following resolution was offered by Messrs. L. M. Rice and George F. H. Markoe:

Resolved, That the Secretary be requested to telegraph a fraternal message to the British Pharmaceutical Conference, now in session in Liverpool.

The resolution was carried unanimously.

The following reports of Committees were handed in, read by their titles, and laid upon the table for future action:

Report of the Executive Committee, accompanied by the report of the Permanent Secretary.

Report of the Committee on the Progress of Pharmacy.

Report of the Committee on Scientific Queries.

Report of the Committee on the proposed Constitution and By-laws.

Report of the Permanent Secretary on Legislation concerning Pharmacy.

The following Committees failed to present reports:

Committee on the Drug Market, Henry W. Fuller, chairman.

Committee on Unofficial Formulas, George F. H. Markoe, chairman.

Committee on Photographic Album, Henry W. Lincoln, chairman.

The appointment of a Committee on Nominations being in order, the President expressed his gratification in meeting the delegations of four local Pharmaceutical Associations constituted since the last meeting, and extended a cordial welcome to the delegates of the California Pharmaceutical Society, the Newark Pharmaceutical Association, the New Jersey Pharmaceutical Association, and the Alumni Association of the Massachusetts College of Pharmacy. The following appointments were then made for the Nominating Committee:

From the New York College of Pharmacy, David Hays.

"	Massachusetts	"	"	Samuel M. Colcord.
"	Philadelphia	"	"	James T. Shinn.
"	Maryland	"	"	J. F. Hancock.
"	Chicago,	"	"	Albert E. Ebert.
"	California Pharmaceutical Soc.,	W. T. Wenzell.		
"	New Jersey	"	Assoc.,	Randall Rickey.
"	Alumni Assoc. Phila. Coll. Ph.,	P. J. L. Carberry.		
"	"	Mass.	"	Chas. A. Tufts.

The delegation of the Newark Pharmaceutical Association not having arrived, it was moved and carried, that Mr. Alexander C. Peters, of Newark, N. J., be appointed to represent that Association on the Nominating Committee.

The President appointed from the Association at large the following gentlemen: Fleming G. Grieve, Milledgeville, Ga., John A. Vandegrift, Burlington, N. J., Matthew F. Ash, Jackson, Miss.

Mr. Thomas S. Wiegand, the chairman of the Executive Committee, being confined to his home by sickness, Mr. Alfred B. Taylor read the report of the Executive Committee, as follows:

The Executive Committee respectfully report, that early in February the Seventeenth Volume of the Proceedings of our Association was published and distributed; although nearly two months earlier in the year than the Sixteenth Volume appeared, it was delayed several weeks by occurrences beyond the control of either the editor or Executive Committee.

A number of applications for membership have been received, and will be reported at the proper time. The Committee would here suggest the importance of all members, when supplying blanks to their friends or acquaintances, informing them that the application should be accompanied with the initiation fee and dues for the current year, as no one can constitutionally be admitted to any of the rights of members, until they have complied with these requirements. The necessity of this provision will be apparent to every member who will make inquiry of the Treasurer about this matter.

At our last meeting, the number of deaths which were reported was four. It is our sad duty this year to announce to you double this number as having been returned to us, and among this number one whose name has appeared in our Proceedings, in connection with papers which have contributed instruction and profit to our members. We allude to Prof. F. F. Mayer, formerly of the New York College of Pharmacy. The last information his friends have given us of him, was that for some time previous to the close

of last year he had been suffering from neuralgia of most acute kind, and that he was last seen between Christmas and New Year in about the same state of health; since which time diligent inquiry has failed to elicit further information, and he must be considered as one dead. His papers, of which mention have been made, were published in the Tenth, Eleventh, and Twelfth Volumes of our Proceedings. Those who knew him best, represent him as a gentleman of cultivation and refinement; he was a fellow-member for ten years.

WILLIAM ELLIS JENKINS, of Boston, who graduated at the Massachusetts College of Pharmacy, died of consumption following pneumonia, on the 6th December last, having been a member of our Association four years. His friends testify to his professional skill and personal worth.

ARTHUR W. GABAUDAN, a well-known pharmacist of the City of New York, and a native of New York State, died on the 4th of January, in the 57th year of his age. He had studied both pharmacy and medicine, but devoted himself, after his 24th year, exclusively to the former profession, in which he excelled.

The Board of Trustees of the New York College of Pharmacy passed a series of resolutions expressive of their appreciation of his worth and sense of their loss.

He left a wife and two daughters, having buried his only remaining son a short time previous to his death. He was elected a member of our Association in 1862.

PETER V. COPPUCK, of Mt. Holly, N. J., died on the 29th December last, aged 64 years. He was esteemed a good apothecary and worthy citizen in his neighborhood, and had, by his industry and attention to his business, acquired a competence. He was an associate member of the Philadelphia College of Pharmacy, and had been connected with our Association for twelve years.

JOHN SYLVESTER BENZINGER, of Baltimore, died on the 14th day of December, 1869, and had been a member since 1860.

WM. H. MULLER, of Chicago, Ill., in the 48d year of his age. Educated in Hameln as a Pharmacist, and graduated at the University of Göttingen. He was employed for a time by Messrs. Hegeman, Clark & Co., of New York. In 1857 he removed to Chicago, where his attainments, scientific and literary, at once commanded the respect and confidence of the public. Possessed of a kind and generous disposition, and unbending integrity, he was esteemed by his business associates, with whom he actively labored in establishing the Chicago College of Pharmacy.

He leaves a family to mourn his death, which occurred 11th December, after several months' illness. He had been a member of our Association since 1869.

HENRY G. D'EVERS, of Chicago, Ill., was born in Hanover, Germany; studied at the Universities of Giessen, Göttingen, and Jena. He emigrated to this country in 1848, residing successively in the cities of New York, San-

dusky, and Buffalo; he removed in 1858 to the city of Chicago, where he entered the wholesale drug business, and was so engaged for six years, when he opened a retail pharmaceutical establishment, in which, by his ability and integrity, he gained the confidence and regard of his customers. He was successful up to the time of his sudden demise, the result of an accident. He was connected with our Association for four years. His family, consisting of a wife and three children, mourn his early death.

HERSCHEL PARKER, of Brooklyn, N. Y., died on the 8th of August, 1870, of typhoid fever, in the 41st year of his age, after an illness of only two weeks.

He commenced his business career at the early age of 18, and so creditably did he fulfil the various duties incident to his profession, that he won the esteem both of his business associates and the public with whom he was brought in contact. He became associated with us in 1867.

There are two other names which must be added to the Obituary Roll, but being Honorary members, it was thought best to make separate mention of them. And it is singular that both of them should be natives of France.

PIERRE FRANÇOIS GUILLAUME BOULLAY died at Paris early in November last, aged 92 years. Born at Caen, educated primarily in his birth-place, but afterwards in Rouen, and finally in Paris.

In the year 1798, he commenced his career as a pharmacist on his own account. One of the founders of the Bulletin de Pharmacie, which subsequently became the Journal de Pharmacie, he was distinguished for his thoroughness and conscientious performance of all the duties of his profession, even to the manufacture of everything proper and possible to be made in a pharmaceutical establishment. In this country he is best known in connection with the process of percolation, and by him its great utility in Pharmacy was most completely demonstrated.

His character was unsullied; courteous, yet with a high sense of his own standing, he was respected and esteemed by all who knew him.

STEPHANE ROBINET, of Paris, died in the early part of last December, in the 74th year of his age; a native of Paris, but educated in early life among Germans, he was well versed in that language; his preceptors were Vauquelin and Pelletier, and although for a few years he practised the profession of a pharmacist, he soon also devoted himself exclusively to the science of his art.

His great familiarity with science in general, and his connection with public affairs, gave him a great influence among his professional brethren. He is represented as having been an eloquent and dignified speaker, full of politeness, yet frank in the expression of his convictions. His death resulted from a cold taken while attending the Convention at Vienna last September.

The Committee respectfully repeat the request they have so often made, in regard to having information respecting any of our members who may have died, forwarded to them, so that an appropriate notice of the same may be embodied in their report.

A very important matter must be noticed by your Committee before closing

their report; and it is, the necessity of some improvement in the finances of our Association. It is nearly always six months after the volume of Proceedings is issued before the various parties who do the work upon it are paid; this is simply disgraceful, to say the least, and is positively injurious to our business reputation, as all who become cognizant of such state of affairs, will feel unwilling to treat with such a body on favorable terms.

The Committee feel they would be derelict in duty did they not bear testimony to the promptness and courtesy which they have met with from all the officers and members with whom their official duties have brought them in contact. On behalf of the Committee.

T. S. WIEGAND, Chairman.

The Permanent Secretary now read his Report to the Executive Committee, as follows:

REPORT OF THE PERMANENT SECRETARY.

TO THE CHAIRMAN OF THE EXECUTIVE COMMITTEE:

The Proceedings of our Association for the year 1869 were shipped and mailed early in February of the present year, about six weeks in advance of those for 1868; the Secretary trusts that a further reduction in the time of publishing the forthcoming volume may be accomplished, since a considerable delay was occasioned last year in consequence of the necessary correspondence connected with the distribution of the draft of the law to regulate the practice of Pharmacy.

Up to the time of publication last year, nine resignations had been received, and thirty-seven members were placed upon the suspended list, mostly for non-payment of dues, and in a few instances, because their residence has not been known for some years past. A few of the suspended members have since paid up, and some others, it is expected, will follow, when their names will be again restored on the roll.

The insurance in the New Amsterdam Fire Insurance Company, on the books belonging to the Association, still remains at the sum of \$2500, at an annual premium of \$15. The stock of Proceedings now stored at the building of the Philadelphia College of Pharmacy, exclusive of the copies present at this meeting, and a few surplus copies in two other cities, is as follows:

1851,	.	358	in paper covers.			
1852,	.	127	"	"		
1853,	.	129	"	"		
1855,	.	141	"	"		
1857,	.	246	"	"	28 bound.	
1858,	.	77	"	"	17 "	152 loose.
1859,	.	—			58	"
1860,	.	—			234	"
1862,	.	—			808	"
1863,	.	—			290	"

1864, . . .	198	in paper covers,	100	bound.
1865, . . .	161	" "	45	"
1866, . . .	77	" "	88	"
1867, . . .	158	" "	109	"
1868, . . .	65	" "	160	"
1869, . . .	110	" "	184	"

The Proceedings for 1854 and 1856 are entirely out of print; of the latter year (1856), however, two copies have been found, and are now in the hands of the Secretary, which, though a little soiled, would answer well for the completion of sets.

Since last meeting the Secretary has received from the sale of Proceedings, the sum of \$62.55, which amount was paid over to the Treasurer.

The Permanent Secretary is of the opinion that the number of complimentary copies of our Proceedings annually given away, might be materially curtailed. It is certainly desirable that the Proceedings should be placed in some of the most important libraries, and that they be furnished to a certain number of educational institutions. Some years ago, when the Executive Committee made up the present extended list, a number of journals and institutions—some of the latter publishing periodicals—were placed thereon, to enlist their sympathy in our cause and co-operation with our aims. Although they have been receiving the Proceedings for years, many of them have never acknowledged to the Secretary the reception of the gift; and, besides the strictly pharmaceutical journals, and with the exception of the Dental Cosmos and the American Journal of Medical Sciences, both published at Philadelphia, the Annual Report of the Longview Lunatic Asylum, near Cincinnati, and some Annual Catalogues of State Libraries, no other publications from this Continent have been received in regular exchange, save occasionally a single number of one or the other medical journal. Our regular exchanges with European societies comprise the following: One monthly (now a weekly), and one annual, published in London; one monthly, published in Brussels; one monthly, published in Speyer; one monthly, one quarterly, and one irregular (about 2 volumes a year), published in Munich; one weekly, published in Vienna; two annuals, published in Göttingen; one weekly, published in Berne; one monthly (now weekly), published in St. Petersburg; one monthly, published in Stockholm. Besides these periodicals, various pamphlets, essays, and larger works, are now every year sent to the Association from Europe.

Considering all these facts, and keeping constantly in view the propriety of furnishing gratuitously our Proceedings to such institutions where they are likely to be productive of the greatest amount of good, a revision of the list of societies, journals, and individuals, &c., published annually since 1866, appears to be necessary, in conformity with a resolution passed at the Fourth Session of the Fourteenth Annual Meeting. (See Proceedings, 1866, p. 67.)

The Secretary, with the consent of the Executive Committee, has furnished to the various Pharmaceutical Societies on this Continent, of whose existence and of whose aim to found a library he was officially notified, a complete set

of the Proceedings; also to all the State Libraries (except Connecticut, which state had to transfer it to Trinity College, Hartford), all of whom now receive our publications regularly. Thereby alone, about fifty copies become accessible throughout the United States, to those who, not being members of our Association, may desire to consult them; in addition thereto, the Libraries of the Congress of the United States, of the Smithsonian Institution, and of the Surgeon-General, U.S.A., are open to some who may be interested in our labors. Such other public and educational institutions ought to be added where the Proceedings might be of good service. While other institutions might, from time to time, be added by the Association, it would perhaps be best to instruct the Executive Committee to withhold them from all others, and to grant them in exchange to such journals only, which may be of some value to the Association in making up the annual Report on the Progress of Pharmacy.

The incidental expenses of the Permanent Secretary during the past year have been \$86.82 less than during the previous year. This saving is partly due to the circumstance that the State Libraries were furnished only with a single volume, while last year they received an entire set of Proceedings; partly, also, to a greater perfection of the system of distributing the publication to members and others. The various items were as follows:

Postage Stamps,	. . . . .	\$88 55
Freight and Express charges,	. . . . .	92 90
Packing Boxes,	. . . . .	8 40
Packing Paper, Twine, Nails, &c.,	. . . . .	8 25
Expenses on Money Orders,	. . . . .	20
Collection Expenses,	. . . . .	2 00
Printing of Circulars, &c.,	. . . . .	16 75
Fire Insurance,	. . . . .	15 00
<hr/>		
Total,	. . . . .	\$227 05

JOHN M. MAISCH,
Permanent Secretary.

It was announced that the delegation of the Newark Pharmaceutical Association having arrived, they appointed Mr. Edw. P. Nichols a member of the Nominating Committee, in consequence whereof the name of Mr. Peters was withdrawn, he not being a delegate.

The President then read his Annual Address, as follows:

GENTLEMEN OF THE ASSOCIATION:

In compliance with a provision of the constitution under which we are associated, it becomes my duty to address you; and if, in performing that duty, my remarks should be more extended than has been usual, I must beg

your indulgence, in consideration of the numerous subjects which affect our collective membership, and of my interest in them as the retiring President of this Association.

Before proceeding to these subjects, I desire to express my high appreciation of the honor you conferred in placing me in this position; and also my thanks for the considerate kindness shown me by my fellow-officers and members. It is proper, also, to express gratitude for the continued blessings of life and health, and that so many of us are enabled to meet together in this beautiful Monumental City, to exchange kind words and the warm pressure of hands, at this our eighteenth reunion. But while we enjoy the pleasure of meeting old and tried friends, leaving behind us for a while the cares of our private business, we must not forget that we have come together for serious deliberation and counsel.

The national character of our Association renders it of the greatest importance that we conduct its affairs with so much wisdom and foresight, as to provide for any adversity which may hereafter occur.

To do this, we must now build upon a sound financial basis, while as yet no danger threatens our prosperity. It is to be regretted, however, that our financial condition is not what it ought to be, and this fact should call forth our best efforts for its improvement.

Through the untiring efforts of your Treasurer, the Association is nearly free from debt, but we are compelled from year to year, to anticipate our resources, in order to provide for our obligations. We are thus practically always in debt.

This is not good business policy and should be immediately corrected. Our usefulness largely depends upon ample resources, to carry out whatever plans may be devised for extending the influence and practical benefits of this Association.

We heartily value the social pleasures of our meetings, yet we must continue to develop the energies and talents of the members, or we shall fail of the great results aimed at in our organization.

Your officers labor under serious embarrassment each year from a lack of pecuniary resources. There is an evident injustice in the great amount of official labor thereby involved, required from your Secretary, Treasurer, and the Executive Committee, almost without compensation.

The Association is thus compelled to lose a portion of its dignity by reason of so much unpaid work, and though we are now happily able to obtain the valuable services of our excellent Secretary and Treasurer without just compensation, it does not in the least change the obligation, for "the laborer is worthy of his hire." We owe it to our own self-respect that these officers receive some adequate compensation for the duties performed. Moreover, this state of things cannot continue, for their respective duties have now become so arduous that but few can afford to accept either position.

Here we are met by the fact that our revenues do not enable us to meet any increase in our expenses, affording a potent argument in favor of increasing our annual dues, as proposed at the last meeting.

The present time is opportune for this action, the preparatory step having

been taken in the appointment of a Committee to revise the Constitution. This committee will report many changes shown by experience to be necessary, and among them is an increase of the various dues.

Believing that the subject of revenue is the most important one to be acted upon at this time, I trust we shall carefully weigh the recommendations offered, and reach such a conclusion as shall place the Association upon a footing of permanency and of lasting credit.

Under the present rate of dues, each member pays but fifty cents per annum, towards defraying the ordinary expenses, beyond the cost of the annual volume of Proceedings, which each member receives free. It requires no arithmetic to show that this is not enough, and the deficit must be met by voluntary contributions, or by imposing an extra assessment from time to time. This method, in my opinion, tends to disaffect more members than would the regular increase of the dues to five dollars per annum. For it must be remembered that only a small portion of our membership participate in our annual meetings, and those not present do not appreciate the necessity for these extra assessments, and do not pay them understandingly, if at all.

Of the members elected previously to 1867, over 170 have, or will soon, become life members, under a former provision of the Constitution, which made the payment of dues for ten years the fee for life membership. In 1867 the Association requested each member to elect whether he would relinquish or retain this right: nearly all relinquished; 112 have declined to relinquish, and there yet remain 62 who have neglected to reply to the Treasurer, although several circulars have been sent to each one of them, inclosing postage stamps for a return. It would seem that a proper regard for business etiquette would induce them to reply, even if they have not sufficient interest in the welfare of the Association to do so.

It being desirable to know precisely on what grounds each member stands, I suggest that one more effort be made by the Treasurer to ascertain the option of each. I also recommend that all of this class who are in arrears for dues for two years or more, be dropped from the roll without further correspondence. Each one to be allowed to resume his membership under the amended Constitution, on the payment of dues to the date of his application.

The 170 members referred to, are each entitled to a copy of the Proceedings, which cost an average of \$2.50 per copy to publish. When all shall have become life members, it will entail upon us an aggregate annual expense of \$425, for which there will be no adequate return. When the provision alluded to was made, no one contemplated such a result, nor the increased value and scope of the published Proceedings.

Under these circumstances, the changed condition of the Association and the increased value of membership, should be generously considered by those who receive this unlooked for benefit.

The subject of life membership upon a different basis has received frequent consideration, and, it would appear, with sufficient reason, from the advantages such a membership presents for increased revenue, I respectfully urge it as good policy to provide for this class of members; if the fees for life

membership shall be a sum, the interest of which will equal the annual dues, no injustice will be done, but rather a material benefit will result, providing the amount received be funded, so that it shall be a perpetual income long after the author of it shall have passed away. I would prefer, however, to see the rate for life membership fixed so high that it would need no further change; and therefore favor the sum of one hundred dollars. Will any one who is able to pay it object to this amount? the welfare of the Association being the only motive sufficient to induce any one to become a life member. This plan opens a way for those who wish to benefit the Association, yet who may not be willing to make a direct gift of equal value. In other words, it will enable a member to make a serviceable and enduring contribution without appearing to test his liberality, and also without placing the Association in the position of receiving a gratuity.

It may be thought proper and desirable to allow those members who have paid dues for ten years, to commute for all further dues by the payment at one time of a sum, that shall, with the dues already paid, be equal to the dues for life membership; thereby making an equitable concession to the older members. If successful, a fund would be created by proper investment, that might stand the Association in good stead for some future emergency, or for scientific purposes.

The initiation and certificate fees should also be funded or set apart; as being received but once from each member, they constitute an incidental revenue, and no ordinary expenses should be provided for out of such receipts. It would be more in harmony with our general aims to use this sum as a prize to members for scientific researches, or to aid persons willing to undertake journeys for scientific discovery.

It may be worthy of suggestion that the objects of the Association would be materially advanced by the offering of individual prizes for specified purposes. A vote at this time, authorizing such prizes, might be advantageous; the prize to be named after the donor.

No argument will be needed to show that the receipts from annual dues should at least be sufficient to pay our annual expenses. The dues for membership being the only reliable income of the Association, each member should in this way pay his full share of the expenses from year to year.

The following statement will show the proportion of expenses to each contributing member for the last year:

The number of members now on the Treasurer's book is shown to be,	881
Loss from death, resignation, and dropping,	31
The number who decline to relinquish life membership, .	112
(This number will probably be increased.)	
The average number who are delinquent in the payment of dues each year, and who cannot be relied upon for revenue,	88
	<hr/>
Leaving available for revenue at this time,	600
	<hr/>

The cost of printing and binding our Proceedings for 1869, was	\$1,625
The Secretary's expenses for distribution, postage, &c., .	250
The Treasurer's, and other incidental expenses, <i>about</i> .	400
The salary of the Secretary and Treasurer,	600
The Phonographic Reporter,	175
 A total of	 <hr/> \$8,050

Which sum divided by 600 will make for each reliable contributing member an average of \$5.08, or for the total number of contributing members, say 700, we have for each the sum of \$4.36.

If we estimate that at the close of this meeting we shall have 700 reliable contributing members, the contribu- tion at \$5 each, will give us,	\$8,500
Entrance fee for seventy-five new members, at \$5 each, .	375
Say 25 certificates during the year, at \$5 each, . . .	125
 Or a total revenue of	 <hr/> \$4,000

If we estimate that 100 members in addition to the usual number of delinquents will fail to pay the increased dues, it will lessen this amount \$500, leaving a balance of \$3500.

The above exhibit clearly shows that a revenue of at least \$4000 annually, will be required to carry on our work satisfactorily. It also shows that with the present membership and expenses, the annual dues should not be less than five dollars, which sum will, I think, be as cheerfully paid by the interested member, as three dollars have been. The number of delinquent members is shown to be nearly 100, or about 15 per cent. of the membership. This number may be supposed to represent those who take no active interest in our efforts, and the proportion will not vary materially under an increased annual assessment, providing it is shown to be necessary. The increase in our membership, it may be safely estimated, will average seventy-five per annum. This increase may be expected to more than make up our losses by death or resignation, and to cover any increase in our expenses as we enlarge our operations.

By this showing, it would appear that, placing the annual dues at five dollars, the initiation fee at five dollars, and allowing the price of certificates to remain at five dollars, we should be enabled to somewhat more than pay the present expenses from the annual receipts. The excess might accumulate in time sufficiently to enable us to pay current expenses without a draft on the future. This would enable us to publish our Proceedings more promptly and at less expense, while it would save our officers much hard work, and the breaking of many promises.

It will be remembered that the dues are payable in advance, yet our Treasurer is fortunate if he succeeds by diligent labor in collecting the greater portion during the current year. This negligence, on the part of

members, prevents the prompt payment of the printer, and of other expenses, and creates embarrassment.

A little reflection, therefore, will show us the importance of a prompt payment of dues in advance, which would save our worthy Treasurer days of wearisome and irritating labor, and confirm the credit of the Association.

Some measure should be adopted for placing in the treasury at this time, a sum sufficient for the expenses of the coming year; and as I neither approve of begging nor of extra assessments, I think of no better way to accomplish it than for each one present to pay his dues for two years in advance, which with the amount remaining on hand at the close of this meeting, will probably meet all bills promptly when due.

A temporary loan of this kind will, I think, permanently relieve us, if the proposed increase of the dues should be adopted. A vote may be necessary to enable the Treasurer to receive funds in this manner, if deemed desirable.

It would be well to provide that the initial fee and the dues for one year, both being payable in advance, shall accompany each application, or no action be taken thereon. This will insure that the application is made in good faith, and save the delay and expense of collection by mail.

I have presented at great length the financial problem, deeming it of paramount importance, and trust your superior wisdom may determine the best course to pursue.

The Executive Committee succeeded this year in issuing the volume of Proceedings two months earlier than usual. The work is a model of neatness and accuracy, reflecting great credit upon the Committee, the Permanent Secretary, and upon the phonographic reporter of our meetings, Mr. Slade, who has become an indispensable assistant to our official corps.

The report of this Committee, with that of the Treasurer, and of the Permanent Secretary, will lay before you the details of our transactions during the year past.

The Committee on the Progress of Pharmacy will present a very full and able report by its chairman, the result of diligent and praiseworthy effort, to continue the ample record of scientific investigations heretofore published. The wide range covered by this Committee, including science, art, and literature, involving a vast amount of labor to prepare a comprehensive and detailed report, leads me to suggest that the work be classified, if possible, and that a separate portion be assigned to each member of the Committee, instead of, as at present, expecting all the work to be performed by the chairman; otherwise, I fear that we shall soon be unable to find a chairman for the Committee.

An effort should also be made, even at an increased expense, to have the foreign journals placed in the hands of the Committee sooner, if possible, after publication. The prompt receipt of these would diminish the labor fully one-half, and would enable the Committee to occupy leisure moments during the whole year, instead of being obliged to prepare the entire report during the hot months of summer, when other duties are most pressing. A

change in the time of our annual meeting might obviate this and many other difficulties under which we now labor.

The Committee on the Pharmacopœia made a final report at the last meeting, which will doubtless have due influence with the Revision Committee appointed by the National Convention.

I respectfully recommend that this Committee be enlarged, to consist of one member from each incorporated pharmaceutical body represented in this Association. Each delegation present to nominate its representative in the Committee. Vacancies to be filled and additional members added, in the same manner from year to year. The Committee to choose its own chairman, and a meeting to be held at each meeting of this body. I think the advantage of having one member of the Committee from each College of Pharmacy will be apparent, as it will almost insure a good report from each local Association at the next decennial revision of the Pharmacopœia. It will also increase the interest which should be more generally felt in this important work. One report only was presented at the last Convention, from all the Western and Southern States.

The frequency of fraud practiced in the adulteration and sophistication of drugs and chemicals, and the absence of any report on this subject, leads me to recommend the creation of a Standing Committee, whose duty it shall be to report annually upon all known frauds of this nature, whether home or foreign.

It is plainly the duty as it has been the policy of this Association, to make no compromise with adulterations nor with adulterators. It is also certain that a fearless and prompt exposure of this evil will do more than most other efforts, to win friends and respect for us among physicians and the public. No sin deserves more severe rebuke or more prompt punishment, than that which silently and unknown works mischief and death upon the suffering invalid. Our state laws are defective, and public justice is blind, but if we had an active Committee to ascertain facts of this nature, its annual report would doubtless exert a powerful influence to check this growing and unblushing evil, would place us fair upon the record, give our law-makers a basis to work upon, and would result in great practical benefit to us all.

One of the aims of this Association being to encourage fidelity to the Pharmacopœia, can we exert a greater or more valuable influence than in the exposure of faulty, and especially of dishonest preparations and combinations? Such investigations would properly come within the range of this Committee, and must indirectly result in advantage to us, while they would encourage and help those who strive to do their duty in defiance of unprincipled competition.

The surest way to retain or increase our membership, is to enhance the practical value of the Association to the utmost; this can best be done through the information we communicate of practical advantage to those in business.

The proposed Committee will have it in its power to add something of value to the vast store of information heretofore presented in our published Proceedings.

The Committee on the Drug Market will present a report containing some important suggestions in relation to its work in the future. This Committee should have more definite duties assigned to it, which I think might very properly, and to our advantage, be confined to matters of a commercial nature, including all questions of legislation affecting the drug business. A report on the condition of the market during the past year, seems of little value as compared with one giving the anticipated supply and consequent value of drugs, for the ensuing year. This can be done with considerable accuracy by our large importing and manufacturing houses.

Many facts relating to the quality and the choice in different varieties of certain drugs and chemicals, might find a place in such a report, to our material advantage. And such a range of duties would, I think, offer work enough for one Committee.

It seems desirable, in order to expedite business at our meetings, that all answers to queries, all volunteer papers, and the reports of Committees should be referred, at or before the second session, to the Committee on Queries, who shall decide which of them shall be read in full, which by title or a synopsis, and notify the Business Committee without delay, so that the time for their presentation to the meeting may be properly arranged. Also that notice be given that all communications and reports, with a synopsis of contents, must be in the hands of the Committee on Queries previous to the third session, to insure publication.

Following the precedent established in 1860, I recommend that a suitable person be employed to make a general index of our publications for the last decade, to be published with our next volume of Proceedings. The former general index has been found advantageous, greatly facilitating reference, and as our publications since have been more numerous, the next will be of yet greater importance for the future.

The exhibition of specimens and of apparatus, has become an important and interesting feature of our meetings, and it should be of great advantage to us. Heretofore there has been no adequate time allowed for their examination, which is unjust toward those exhibiting, and a privation to all those who attend closely to the business of the sessions.

I therefore suggest the propriety of devoting one half-day of each meeting to the examination of the articles on exhibition. I think the effect of this will be to insure closer attention to the business on the part of many, and that it will save much of the annoyance which has heretofore been experienced from interruption and delay.

From our experience it would seem desirable that hereafter all nominations for officers and the chairmen of Committees, be made from those in attendance at the meeting, unless sufficient cause shall exist for a different course, which will very rarely be the case. The advantages which will result from the rule are obvious, and I hope it will be adopted.

Our need of an authorized agent in each state for the collection of dues, the distribution of Proceedings, soliciting membership, obtaining information for our use, and in many ways aiding us in our efforts, leads me to suggest the policy of creating a class of officers, to be elected annually, for these

and kindred purposes. It is doubtless true that the holding of official position inspires an ambition to perform its duties, and in this view it seems desirable to interest by such trust, as large a number of members as possible. With such an officer in each state, the list being published annually, persons desiring information will know to whom to apply near home, and a degree of authority would be conferred that would be better in its effect upon the members and upon those seeking membership or information, than the present system of volunteer effort. This class of officers might also be of great service to us, and would render the duties of other officers less laborious.

For evident reasons, the officers proposed should reside in the most populous cities, or where access could be had to the largest number of members, with the least expenditure of time or money.

It will be remembered that at the last meeting our worthy Permanent Secretary felt compelled to resign the position, which to the great advantage of the Association, he has so ably and satisfactorily filled. He was impelled to this course from a pressure of other duties, and a desire for more leisure to pursue professional investigations.

While each one of us deeply regretted his resignation, we felt that his reasons for it were good. Knowing as we all do the many and laborious duties of his position, and the self-sacrificing spirit with which he has performed them, and feeling that we can have no claim upon him for further similar toil, I almost hesitate to urge him to continued service. Yet so plainly is the importance of his work seen, that I earnestly hope he may consent to further afford his valuable services in the position he is so eminently qualified to fill. I say this in the belief that as he has the good of the Association at heart, he will not decline, if it be shown that his services are necessary.

The action taken at the last meeting on the proposed law to regulate the practice of Pharmacy, offered by the Committee, has seemingly been misunderstood in many places. The necessity for action of a positive character by this Association, may be over-estimated, yet it can hardly be doubted that some clearly defined recommendation would go far to establish a rule in this matter, and it might be wise to review the subject at this meeting.

In two or more of the states, laws have been already passed somewhat like the one proposed by the Committee. The exchange of views here, by men from widely separated parts of our country, may lead to more satisfactory results than if each section should act upon its own apparent needs, it being desirable to have our state laws in this particular as nearly alike as possible.

As an effect in part of the agitation of this question at the last meeting, may be noticed the great increase of local Pharmaceutical Societies since then, which increases the probability of similar laws being enacted in the several states represented by them.

It will be noticed that the cost of publishing the Proceedings of our last meeting amounted to \$1625, which constituted a very large proportion of our expenses. For this reason it may be well to inquire to what extent they should be distributed gratuitously. By order of the Association, they are sent to the State Libraries and other public institutions, also to American

and foreign journals. It being to some extent an educational work, there would seem to be good reasons for placing them in libraries accessible to the student; but I think that a due regard to the use or the benefit of them should confine this distribution to educational institutions of the higher order, where students may have the benefit of perusal, and the purpose of publication be most fully answered. It is desirable, also, that they be sent to foreign scientific journals for the purpose of obtaining exchanges which may be of value to us, but the existing necessity for the greatest economy consistent with the welfare of the Association should forbid any merely complimentary use of them. To this end, I suggest that the distribution be left wholly to the discretion of the Secretary and of the Executive Committee.

In common with many others I deprecate the plan of waiting for invitations before selecting the place of our next meeting. I believe that the objects of the Association would be more fully attained by selecting the proper place regardless of invitations. When the invitation of a local Association is accepted, we become their guests, and it is only natural that in this relation they should feel the necessity of entertaining us in a becoming manner, even at considerable expense to themselves; a course of conduct which has more than once called forth very plain expressions of disapprobation from our members, yet which is certain to be continued as long as invitations are received and accepted. The change proposed would relieve the members in the place of meeting from this feeling of obligation, and would lead to the selection of the most advantageous point for each meeting.

I would also approve of the rule being enforced, that the Local Secretary shall provide needful accommodations for the meeting at the expense of this Association, thereby removing altogether the unpleasant feeling of dependence heretofore complained of.

I desire to call your attention to some facts connected with our membership, which I think should have an influence on the selection of places for our future meetings.

Wherever our meetings have been held a large increase in our membership from that section of country has been the result. To illustrate the effect of this, we find that we have in Philadelphia 114 members, in New York City 94, in Boston 65, in Chicago 60, in Cincinnati 88, and in Baltimore 46 members. This is the most southern city yet visited by us, with the exception of Washington near by. From our roll of members it appears that we have only 45 members in the 18 Southern States, of whom 14 reside in the city of Louisville, Ky. This number is so disproportionate to the number of accomplished pharmacists in the southern half of our country, as to awaken inquiry for the reason. When we allow the full influence of the war, and the difficulty of maintaining intercourse for ten years past, and the great interruption of business in that section, even then the fact is not explained. Something is needed to bring our Association before the many there who are known to feel a lively interest in the progress of Pharmacy, and thus secure their co-operation and convey to them the benefits.

What has been done by our meetings in Northern cities may be just as practically accomplished in the South, if our sessions are held occasionally

there. This is precisely in the line of our efforts, for our objects are national, and our membership is designed to represent every section and state. In order to gain this result, let our meetings be hereafter fairly distributed with regard to our aims rather than our invitations to hospitality.

Another interest of the Association which seems to require notice at this time is our relation to the medical profession. One of our chief objects is to beget and encourage a desire among apothecaries for a better professional education; to attain this, no other influence is more powerful and direct than that of the educated and skilled physicians throughout the land. When they shall unitedly demand honesty, carefulness, and a thorough education on the part of druggists, a great step will be taken toward realizing our noblest results.

I believe that the character and the objects of our Association are not understood, and therefore not appreciated by physicians, and that but little is known of the progress already made toward elevating our business to a professional standing. We are yet generally regarded as merchants, buying and selling and getting gain at their expense, which is very far from the truth. We should use all proper means to inform them better, and strive to place our kindred professions side by side in the work of ameliorating the sufferings of our race. They can exert a much-needed influence by inducing a more generous support of this and of kindred local associations, while in the absence of this influence our colleges will continue to lack the aid and encouragement of the larger part of those in the trade. The proper starting-point is here, to be followed by each local society; which, if done, will secure their desired co-operation, and in turn will greatly aid us in securing proper legislative action in our behalf.

If, as I fully believe, these results are worth seeking, I would suggest that an address to the medical profession be prepared, clearly presenting our community of interests and our relations to each other, to be published with our Proceedings, and that extra copies be furnished to members for distribution to physicians.

In this connection it may not be out of place to refer to the fact that several of the Universities and Medical Schools of this country are now giving special instruction in Pharmacy, and that in some diplomas are awarded for proficiency in this particular branch of study. A feature complained of, and one likely to create trouble hereafter, is that a student may be graduated as a Master in Pharmacy without having had any experience whatever in the practical work of the shop, thereby unsettling our notions of what constitutes a pharmacist, and also unsettling the value of a diploma. This being the only national organization of pharmacists, and supposed to take cognizance of whatever relates to pharmacy, it may be well to consider this innovation and place upon record our opinion of its merit with the purpose of influencing the action of such schools in the future.

If Universities are to confer degrees in Pharmacy without requiring the necessary qualifications, or if they are to be their own judge of what constitutes qualification, the teachers themselves being ignorant of what should

be required, then it is time for earnest work on our part, and for the establishment by law of what an Apothecary shall know and be capable of doing.

Our Colleges of Pharmacy may close their doors if Medical Colleges are to be allowed to confer the title of Graduate in Pharmacy upon students who have never studied Pharmacy properly, nor had a pharmacist for a teacher. It is not possible to prevent this by the laws now in force, each College and University in this free land having the right to fix its own standard for any title it may choose to confer. We must therefore defend ourselves if we think defence is needed, until such time as legislation can be obtained to protect us. We can, however, by proper measures, exert an influence upon physicians and upon students that will in part at least counteract the evil mentioned.

A Convention of delegates from the various Colleges of Pharmacy has been called to meet simultaneously with our own, and I trust this Association will give its encouragement and indorsement to whatever wise measures may be inaugurated for the better education of students in Pharmacy, and for the elevation of the standard of qualification necessary to graduation.

At the risk of too greatly extending this address, I venture to introduce another subject, which to me appears of great interest in the future.

It will be conceded that druggists as a class are not wanting in the nobler traits of character, as shown in the exercise of all social and patriotic virtues. Our professional labors and personal tastes may lead us away from politics and war, but do not prevent us from glorying in the national progress and honor. Looking to the near future, we find ourselves as a nation approaching the centennial anniversary of its birth.

Would it not be well, in anticipation of this great event, for us, as an Association, to devise some suitable commemoration of this important period in our national existence and of the world's history. Our general government will, without doubt, signalize this epoch in a becoming manner, and may possibly lend its aid to the inauguration of a World's Exhibition of the Industrial Arts and Sciences, in which we might profitably co-operate.

In this connection I am pleased to lay before you, as being well worthy of consideration, the excellent suggestion of our Permanent Secretary, who is always alive to whatever concerns the interests of Pharmacy. He proposes an International Congress of Pharmacists to be held at Philadelphia during the summer of 1876: the year of our national Jubilee.

To me it seems that such a Congress of men, from whose ranks science has had many of her brightest ornaments, and to whom the world is indebted for some of its most beneficent discoveries, would be a most fitting celebration, and the time most favorable for such an occurrence.

It will be remembered that the next Congress of Pharmacists will be held at St. Petersburg, in 1872. The usual interim of four years will place the succeeding one in 1876. Shall it be held with us? If we so desire it would be well to arrange for it previous to the Congress at St. Petersburg.

Doubtless, the concurrence of notable events in our country at that time will bring many visitors to our shores, and in every view it seems a most propitious moment for us to make the effort. We have ample time for prep-

eration, and no other opportunity is likely to offer in many years to come for so favorably and prominently advancing the interests of Pharmacy in the United States. I therefore suggest the appointment of a Committee to report on the subject with a plan of action, at our meeting in 1871, and hope it will meet your approval.

In conclusion, gentlemen, I am happy to assure you that your first meeting on the Western prairie has borne good fruit. The interest in Pharmacy and in this Association has notably increased in all that section, as your ever watchful Treasurer may be able to testify. To achieve the same results may we not soon include New Orleans and San Francisco as the extremes of South and West, in the beneficent influence of our meetings, uniting all in a common purpose for a common good? Our efforts find encouragement in the numerous local Associations which are forming throughout the country, and in your name I welcome each one of them to our fellowship.

I trust the same wise counsels and generous efforts may prevail in our affairs which have guided us so prosperously in the past.

Our rapidly increasing numbers, the wealth of our intellectual resources, together with the influence exerted in promoting investigation, stimulating education, and inspiring a love of knowledge, give us promise of a bright and useful future. But no great work can be accomplished without corresponding effort, and while anticipating your individual exertions in this work, I cheerfully promise my humble co-operation.

E. H. SARGENT.

CHICAGO, September, 1870.

The following resolution was then offered and seconded:

Resolved, That the President's Address be referred to a Committee, to consider and report on the suggestions contained therein.

The question being taken by Mr. Charles A. Tufts, the resolution was carried unanimously.

On motion of Mr. T. C. Murray, it was

Resolved, That the Committee consist of five members.

The Chair appointed on that Committee, Messrs. William Procter, Jr., Philadelphia, Isaac Coddington, New York, John J. Thomsen, Baltimore, Albert E. Ebert, Chicago, and Samuel M. Colcord, Boston.

Messrs. Procter and Ebert requested to be excused from serving on this Committee, other duties claiming their attention during this meeting. On motion, both gentlemen were excused, and the Chair appointed in their place, Messrs. James T. Shinn, of Philadelphia, and Charles A. Heinrich, of Lancaster, Pa.

On motion of the Business Committee, it was now

Resolved, That when we adjourn, we adjourn to meet again at 9 o'clock to-morrow morning.

The Association then adjourned.

Second Session.—Wednesday Morning, Sept. 14th.

Pursuant to adjournment, the Association met at 9 o'clock. President E. H. Sargent in the chair. The minutes of the first session were read by the Secretary, and on motion were approved.

The Secretary reported that yesterday, after the adjournment of the meeting, he had sent the following message by the Atlantic cable.

To Pharmaceutical Conference, Liverpool.

Fraternal greeting of American Pharmaceutical Association.

MAISCH, Secretary.

The President caused the Secretary to read the following telegram, received by him last evening between 9 and 10 o'clock, by the Atlantic cable:

To President American Pharmaceutical Association, Baltimore.

The most successful meeting ever held sends hearty fraternal greeting.

PRESIDENT BRITISH PHARMACEUTICAL CONFERENCE, Liverpool.

The Secretary also read the following telegraphic despatch, received this morning :

FORT WAYNE, IND., Sept. 18th, 1870.

To the American Pharmaceutical Association, John M. Maisch, Secretary.

City of Fort Wayne presents compliments, and desires to state that she will be at home during month of September, 1871.

H. V. SWERINGEN.

The following resolution, offered by the Business Committee, was adopted unanimously :

Resolved, That the Faculty of the University of Maryland, the Faculty of the Washington Medical College, and the medical profession generally, be invited to be present at the sessions of this Association.

The Treasurer, Mr. Charles A. Tufts, read the following report :

TO THE OFFICERS AND MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION:

In conformity with the requirements of the Constitution, I herewith present a report of the transactions of this office for the past year. All the bills presented to me have been paid, and there is a balance now in the treasury of \$430.59. I should have been unable to report this balance, had it not been for the generous donations of members of the Association, amounting since our last meeting to \$369. We commenced the year with an impoverished treasury, and I report with much pleasure this balance in my hands.

There are now on the books of the Association, the names of 831 members. Unless their dues are paid before our Proceedings are published, a number of names will have to be dropped from our list. Our whole number at that time, without including the names of those who may be elected at this meeting, may not therefore exceed 775 members.

At the last meeting of the Association, I reported that 110 members had not informed me whether or no they would relinquish their right to life membership. I have endeavored since that time to obtain answers pro or con from all these members, so that I might finish this business, which has caused much expense to the Association, and labor to the Treasurer for the past three years. I regret to report that I have been unable to obtain any reply from fifty-two members, although several have been written to not less than eight times.

In 1867 our Proceedings cost \$1508.28; our expenses were \$955.04; the total expenses were \$2463.27. In 1868 our Proceedings cost \$1724.47; our expenses were \$1065.46; the total expenses were \$2789.93. Our Proceedings this year cost \$1623.55; our expenses were \$1848.91; the total expenses were \$2967.46. I see no reason why our expenses each year will not be increased so much as it may be necessary to pay for an increased number of the Proceedings. I have received payment from 487 members the past year; our expenses, therefore, have been \$6.41 to each paying member. The Association will therefore perceive that we cannot well proceed in this manner; that we need some further legislation to enable the officers to maintain the honor and credit of the Association.

We have 476 members who have relinquished their life membership, and 96 who have not relinquished it. Of the latter number are 22 members, who, while declining to relinquish their right to life membership, have informed me they shall continue to pay their dues until they leave the profession, or are incapacitated by misfortune from so doing. 71 of the 92 members who decline to relinquish, will pay a short time longer, when they will cease to be contributing members. I do not think that we can rely upon over 600 paying members. Our expenses will not be far from \$3000; this will require a payment of \$5 from each contributing member for us to be free from debt at our next meeting.

There are at this time 356 delinquent members, owing about \$1500. The Treasurer has aimed to make this amount smaller, but regrets he is obliged to report so large an amount due. 46 of this number owe for three years,

and it will be the duty of the financial officers to drop these names from the list, unless the amounts due are soon paid. All interested, therefore, will take this as due notice thereof, and govern themselves accordingly. There are 41 members who owe two years, and over 200 who owe for one year. A rule was adopted at the last meeting to withhold the Proceedings from all who were in arrears at the time of their distribution. Several members have written me complaining that they had not received the Proceedings. If they had looked for their bills for 1869, the question would have been answered. The same rule will govern the officers for the coming year, and if any member cannot find his receipted bill for 1870, he will have to seek elsewhere than in his Proceedings for information in regard to the transactions of this meeting.

At the last meeting notice was given that the annual dues might be increased to five dollars per year, and the membership to five dollars. This seems to be imperatively demanded to enable the Association to fulfil its appropriate design. We have only to look back for the last eighteen years, to realize how much benefit the Association has been to our profession. And it could have been of vastly more benefit had we not been crippled in financial condition. Our field for usefulness is opening wider and wider each year, and unless we can increase our funds in some manner, we must struggle on not doing half we could were we differently situated. We should have means so we could offer prizes for essays on subjects connected with our profession, so too, that we could purchase information from all sources at home and abroad, that those connected with us, that the great body of American pharmacists may be equal if not superior to any of their profession in the world.

We desire all good and true men of our profession with us, wherever they may live in our widespread country. We wish no man may join us merely to say that he is a member of the American Pharmaceutical Association. We want no man who will not pay his dues promptly, or grumbles at a small yearly tax for the benefit of himself and to elevate our profession: we have had enough of such members. But any man who is wide awake and wishes to keep himself informed of what is going on around him, who wishes to make himself an ornament to his profession, and to elevate its character in the community, and who will not shrink from a generous yearly payment for those objects, we welcome to our ranks. And I think I express the unanimous wish of my brethren in office that each member may be a rallying committee, and seek out pharmacists of the above description and induce them to be with us and of us.

For the kind courtesy, and in many cases affectionate regard expressed to me by the members of the Association for the past five years, and the welcome assistance afforded me by my brother collectors in our large cities, I tender my grateful thanks. The list of the latter is too large for individual mention.

CHARLES A. TUFTS,
Treasurer.

Statement of the Receipts and Disbursements of the American Pharmaceutical Association for the year ending September 18th, 1870.

RECEIPTS.

1870.

Sept. 18.	To amount received for Contributions,	. . . . .	\$3,042 80
" "	" from sale of Certificates,	. . . .	306 00
" "	" " Proceedings,	. . . .	49 75
			<hr/> \$8,898 05

DISBURSEMENTS.

1869.

Sept. 11.	Balance due the Treasurer,	. . . . .	\$29 68
" "	No. 1. American Bank Note Co., Certificates,	. . . .	25 00
Oct. 2.	" 2. James H. Slade, Phonographic Report,	. . . .	175 00
" 3.	" 3. John M. Maisch, Expenses,	. . . .	67 40
" 4.	" 4. Charles A. Tufts, Expenses,	. . . .	87 50

1870.

Jan. 1.	" 5. Thomas S. Wiegand, Chairman Ex. Com.,	. . . .	400 00
Mar. 20.	" 6. John M. Maisch, Expenses,	. . . .	154 60
Feb. 14.	" 7. Thomas S. Wiegand, Chairman Ex. Com.,	. . . .	100 00
Mar. 15.	" 8. " " " "	. . . .	27 88
Apr. 2.	" 9. " " " "	. . . .	100 00
June 16.	" 10. " " " "	. . . .	100 00
July 27.	" 11. " " " "	. . . .	100 00
Aug. 12.	" 12. " " " "	. . . .	150 00
" "	" 13. " " " "	. . . .	875 00
" 17.	" 14. " " " "	. . . .	200 00
" 24.	" 15. John M. Maisch, Expenses,	. . . .	58 86
Sept. 7.	" 16. " " " "	. . . .	400 00
" "	" 17. Charles A. Tufts, Postage,	. . . .	96 68
" "	" 18. Thomas S. Wiegand, Chairman Ex. Com.,	. . . .	71 17
" "	" 19. John M. Maisch, Expenses,	. . . .	11 19
" 9.	" 20. Harry H. Goodwin, Printing,	. . . .	21 25
" 10.	" 21. Charles A. Tufts, Expenses,	. . . .	17 85
" "	" 22. " " " "	. . . .	200 00
			<hr/> \$2,967 46
" 18.	By balance cash on hand to date,	. . . .	480 59
			<hr/> \$3,898 05

E.E. All of which is respectfully submitted.

CHARLES A. TUFTS,
Treasurer.

On motion the report was accepted, and together with the Treasurer's books, referred to an Auditing Committee. Messrs.

Samuel M. Colcord, of Boston, Thomas Whitfield, of Chicago, and William A. Perkins, of San Francisco, were appointed by the President, the Committee to audit the Treasurer's accounts.

A motion was now made to take up the change of the Constitution proposed at the Seventeenth Annual Meeting, to increase the annual dues from three to five dollars.

DR. SQUIBB.—I would like to see the resolution to alter the Constitution in favor of \$5 annual dues, and \$5 for membership, taken up at this early stage of the session for the purpose of relieving the Treasurer, and letting all who want to pay know at the beginning, so he may be receiving his money during the whole time of the session. If the Business Committee will bring that up (it being now out of order) as a matter of privilege, it might be passed; and those who want to pay during this session could do so. At present, we do not know what the annual dues will be, and the Treasurer must be embarrassed, not knowing what to receive.

MR. COLCORD.—As soon as we get into the next session, I will bring up the Report upon the New Constitution and By-Laws; or, rather, the amendments, which contain that proposition. We will make that the first business after we get together.

DR. SQUIBB.—It seems to me we should begin by having this particular question, which has been alluded to by the President, brought up and disposed of. I think the Association will give its unanimous consent that it be done at once.

THE PRESIDENT.—It may be a question whether the dues for 1870 shall be increased. Some of the members undoubtedly have paid their dues for the coming year. It will be for the Association to determine the point whether all shall pay the same amount, or whether some shall pay \$3 this year, and others shall pay \$5. I think it is to be regretted that any dues have been received. It is a matter that I had not thought of before. The Treasurer gives it as his opinion that if the dues were increased to \$5, it cannot be received this year, but it must apply to next year.

DR. SQUIBB.—That means for the past year. We always pay in advance. We are now paying for 1870-1. That is what the Treasurer is receiving now, or will receive at this meeting, because the Constitution says this annual assessment must be paid in advance. That is to say, this meeting's payment will last from this meeting until the next meeting, and that may be \$5, although some members have paid \$3. If we change it, as I understand it, those members who have paid \$3 for 1870-71, must pay \$2 more.

THE PRESIDENT.—I understand the dues for this year are due at the first session. They may be due on the first session of the new administration.

MR. TAYLOR.—The dues are due on the first day of the session. We have elected a number of new members, and the understanding with them is that the price is \$3 a year, and it will not be fair to them to elect them, and raise the price to \$5.

DR. SQUIBB.—If that be the case we shall have to resort to voluntary contributions again.

MR. COLCORD.—That is covered by the resolution we passed last year in reference to the proposed advance. It is perfectly in accordance with our Constitution and By-laws. We gave notice that we should raise it to \$5, and we are now here to raise it. I see no trouble in raising it for this year. We gave notice that it would come up, and it has come up before this meeting.

MR. TAYLOR.—I think this question had better be postponed until the business comes regularly before us from the Committee on the Constitution. They have this subject in charge, and have thoroughly canvassed it.

THE PRESIDENT.—The division properly should be made between the year, when the new President takes his seat. That is really the commencement of another year. We are now upon the old year, and the dues, in that light, will be due this morning or this afternoon, or immediately after the new administration commences.

DR. SQUIBB.—That is a point well worth consideration.

THE PRESIDENT.—I think that is perhaps the technical solution of the matter.

DR. SQUIBB.—That is a decision which the Association is fully competent to make at any time.

THE PRESIDENT.—I suggest it now for fear I may forget it. I think it is the right one.

MR. TAYLOR.—If that be the decision of the Chair, I think (and I have no doubt it will be sustained by the members) that it would be well for us to increase the dues to \$5 at the old session.

THE PRESIDENT.—So do I.

MR. TAYLOR.—And let the new administration come in under \$5.

THE PRESIDENT.—I should so decide the question if it were submitted to me. I am not called upon to decide.

MR. TAYLOR.—I would move that the annual dues be \$5.

MR. MAISCH.—How will that affect for the coming year the old members who have not paid?

DR. SQUIBB.—It does not touch them.

MR. MAISCH.—Only the new, incoming members?

MR. STABLER.—For all members for the year 1871, the dues will be \$5, and that time commences at the next session.

MR. MAISCH.—I think the gentlemen are mistaken. I think 1870 commences with this meeting.

DR. SQUIBB.—If the Business Committee bring forward the resolution to change the Constitution, notice of which was given at the last session, so that the dues shall be \$5, and the membership \$5, the Constitution is then changed, and when the new President takes his seat, the new provision will be in force.

MR. PROCTER.—Does this amount in dispute, the raising of the dues from \$8 to \$5, apply to those bills that have already been sent to members, or to money, the bills of which will be sent in future?

THE PRESIDENT.—I understand that bills have only been sent for the year 1870. 1871 commences to-day with the incoming administration.

MR. PROCTER.—Is it proposed that those members who have paid for 1870 shall pay \$2 additional?

THE PRESIDENT.—No; but for '71.

MR. PROCTER.—Has there been any money paid for 1871?

THE PRESIDENT.—I don't know.

MR. MAISCH.—Our fiscal year, 1871, commences twelve months hence. That is the way the Association has been carried along. 1870 commences with this meeting and runs for the next twelve months; then commences 1871.

DR. SQUIBB.—I think Mr. Maisch is right about that; I think the coming session is the session of 1870.

THE PRESIDENT.—It is only a question whether you call it 1870 or '71; a question of dates. The point is, that the financial year commences with the incoming administration, and not lapse back on the old one.

DR. SQUIBB.—There is no *ex post facto* business about it.

MR. TAYLOR.—The motion is that the annual dues be hereafter increased from \$8 to \$5, and the initiation fee \$5.

MR. CODDINGTON.—I would like to move an amendment to that, which I think will bring more money into the treasury, and not create so much dissatisfaction; namely, that life-membership be fixed at \$50, payable in five annual payments of \$10.

DR. SQUIBB.—That will necessitate the business laying over another year, because notice of change of the Constitution must lay over.

MR. PROCTER.—That will be brought up in the Report of the Committee on Constitution, and if the election is allowed to go on, that will come next.

MR. TAYLOR.—It is only desirable to regulate this one point. All the other points to be brought up will not materially affect the working of the Association, but it is important that this change be made during the present administration, so the new one may come under the new rule.

DR. SQUIBB.—Mr. Coddington's proposition will have to be postponed for another year.

MR. MAISCH.—Only for one session. Before that vote is taken, I would like to state, there are now in the hands of the Executive Committee a number of propositions. A great many of the applicants have sent in their fees under the old Constitution which they signed. It seems to me to be small business for this Association to tax the twenty or thirty members who may be made during the remaining session \$2 more than the rest of us. It seems to me entirely wrong, to be much better to let the change to \$5 annual dues commence with 1871; we only lose about \$40.

MINUTES OF THE EIGHTEENTH ANNUAL MEETING. 47

THE PRESIDENT.—We lose on the whole.

MR. MAISCH.—I think not. The Treasurer has collected two-thirds or more of the money for 1870.

MR. MILHAU.—Most of these applications for membership have been made a good while. I received one a month ago, and have been expecting another.

MR. MAISCH.—I have myself proposed a number of applicants, the blanks for which applications I sent a few days before the meeting. Those gentlemen are all under the impression that they will have to pay this year \$8 initiation fee, and \$8 dues for 1870, commencing with this meeting.

DR. SQUIBB.—We will have the same trouble next year.

MR. MAISCH.—No, for if we change it this year, it will commence with 1871, and we know how much it will be for 1871.

THE PRESIDENT.—The Treasurer tells me he has collected money for the dues for 1870; that is, for the coming year. My impression was he had only collected up to the present time. If a portion of the members have paid, it is unjust to tax the others any more.

MR. TUFTS.—I have been wishing to state in regard to this matter, that some difficulty will be created in this way. I will illustrate it by saying that our friend Dr. Squibb, for instance, always gives me his dues at our meetings. He gave me his dues last year, which paid him up to a year from now. He always pays a year in advance, and owes nothing until next year. Now, I can't collect anything more from Dr. Squibb.

DR. SQUIBB.—If that only paid the bills, I would not object to it, but as it don't seem to, I don't see how it meets the case.

MR. TUFTS.—Every member that has a receipted bill for 1870, there is nothing due from him until September, 1871.

MR. STABLER.—Here is a bill presented to me by the Treasurer for 1870. When I pay this bill my dues will be paid to the next meeting, for this year and the next. The bill is \$8, and you cannot collect any more until the next meeting, and that is a year from now.

MR. GRIEVE.—We can make it affect 1871.

THE PRESIDENT.—Yes, sir.

DR. SQUIBB.—We may as well let this subject pass along and get at the regular order of business.

THE PRESIDENT.—These by-laws as proposed by the Committee cannot, I believe, unless presented at this meeting, this morning, be acted upon and take effect until a year from now, or rather, I believe they cannot be acted upon.

MR. TAYLOR.—They were proposed last year, and we can make any amendments, I believe.

THE PRESIDENT.—This is not the same one that was proposed last year.

MR. TAYLOR.—It is the same one essentially. There are variations to it. It is, of course, expected that there will be amendments and changes.

MR. CODDINGTON.—The proposition I offered as a substitute, I think, at the proper time, might be offered as an amendment. It will certainly bring in more income than you will get from increasing the fees. There are people who are nominal members, who pay because they once subscribed, but if they had an opportunity to withdraw by any excuse of this kind they would withdraw altogether, and it comes hard upon people who cannot afford to pay more than \$8. We who come here and can afford to pay our expenses, and are enthusiastic in the matter, and have the good of the Association at heart, do not mind it, but a great many do not care much about it. I think a great many of us will be willing to be taxed \$10 a year; that will make a good income for each year, and I think after that, the institution can run along without any increase of taxation. It would be so much increased in the estimation of our fraternity that people would be glad to come in and pay a handsome sum to become members. If you could get 100 members to subscribe \$10 a year, as I have suggested, that alone would furnish an income of \$1000.

MR. EBERT.—This will come up in regular order. Let us now proceed to business.

The report of the Nominating Committee was then presented:

MR. COLCORD.—In submitting this Report, I would like to make a little explanation. I don't know but I am telling tales out of school. This Committee had considerable discussion on the point of the President. With a view to breaking up the practice which has been followed in relation to the nomination of President, the Committee decided to put two nominees in the field, one, a local, the other an isolated member, for the President of the Association. That was afterwards reconsidered. We have united on one man to represent the Association, and to break up the precedent of taking the President of the Association from the city in which we meet, and we offer the nomination to the Association, not but what they can amend it, or put another nomination in the field, to destroy the precedent that has been referred to of taking the President from the large cities, or from the city in which we meet. With that explanation, I will read the list of officers we have decided to present.

The Committee to Nominate Officers for the ensuing year report the following names to the Association:

For President.

RICHARD H. STABLER, Virginia.

For Vice-Presidents.

1st. FLEMMING G. GRIEVE, Georgia.

2d. JAMES G. STEELE, California.

3d. EUGENE L. MASSOT, Missouri.

Treasurer.

CHARLES A. TUFTS, New Hampshire.

Permanent Secretary.

JOHN M. MAISCH, Pennsylvania.

Executive Committee.

THOMAS S. WIEGAND, Chairman, Pennsylvania.

MATT. F. ASH, Mississippi.

ALPHEUS P. SHARP, Maryland.

CHARLES H. DALRYMPLE, New Jersey.

JOHN M. MAISCH, *Perm. Sec., ex-officio,* . . Pennsylvania.

Committee on Progress of Pharmacy.

WM. T. WENZELL, Chairman, California.

THOMAS J. GREATREX, California.

WILLIAM SAUNDERS, Canada.

LOUIS DOHME, Maryland.

*Local Secretary, ex-officio.**Committee on Drug Market.*

JOHN McKESSON, JR., Chairman, New York.

WILLIAM GEARY, California.

JOHN J. THOMSEN, Maryland.

RICHARD M. SHOEMAKER, Pennsylvania.

FREDERICK A. KEFFER, Louisiana.

Committee on Scientific Queries.

ALBERT E. EBERT, Chairman, Illinois.

C. LEWIS DIEHL, Kentucky.

WM. PROCTER, JR., Pennsylvania.

Business Committee.

ALFRED B. TAYLOR, Chairman, Pennsylvania.

E. H. SARGENT, Illinois.

JAMES T. SHINN, Pennsylvania.

Signed on behalf of the Nominating Committee.

SAMUEL M. COLCORD,
Chairman.

The Business Committee moved that the Association now proceed to ballot for President. Pending this motion, Mr. Talbot C. Murray moved to amend that all members who are in arrears on the Treasurer's books be not allowed to vote. The President declared the amendment out of order, as conflicting with the Constitution, when the original motion prevailed and was passed unanimously.

Messrs. Thomas Whitfield, of Chicago, and William T. Wenzell, of San Francisco, having been appointed tellers, the Association proceeded to ballot on the nomination for President, while the Secretary read a letter from Messrs. G. W. Gail & Ax, manufacturers of tobacco, to visit their factory, situated at 28 Barre Street.

The invitation was on motion accepted for the following morning, and the Secretary directed to inform the gentlemen thereof, and to tender the thanks of the Association for this invitation.

~~MR. COLCORD.—I would say~~ I would call attention to the invitation we have accepted, that these are very large works, and it will be a great deal of trouble for us to go scattering along a few at a time; therefore I would suggest that Mr. Maisch notify them that we appear there at half-past eight to-morrow morning. If we are all there together in a body, they will not have the trouble of going over their works a second time.

The tellers reported—

The whole number of votes,	.	.	.	.	.	.	59
R. H. Stabler had	.	.	.	.	.	.	56
A. E. Ebert had	.	.	.	.	.	.	2
Blank,	.	.	.	.	.	.	1

and Dr. Richard H. Stabler duly elected President of the Association for the ensuing year.

The Business Committee moved, and it was carried, that the President be requested to deposit an affirmative ballot for the remaining officers nominated by the report of the Nominating Committee, which having been done, they were declared unanimously elected.

Professor William Procter, of Philadelphia, and Mr. Samuel M. Colcord, of Boston, being appointed by the President a committee to conduct the President elect to the chair, attended to that duty, and the President introduced to the meeting Dr.

Richard H. Stabler, of Alexandria, Va., as the President elect to serve for the ensuing year, who on taking the chair made the following remarks :

GENTLEMEN: I thank you for this mark of your confidence and favor, but while I appreciate the honor of the position, cannot feel free from some embarrassment, and must ask your indulgence owing to my unfamiliarity with parliamentary rules.

In assuming the duties of the Chair, I have to congratulate you on the continued and steady progress of American Pharmacy, and on the position in public opinion that the pharmacist now occupies. Until within a few years the duties of the pharmacist, in many parts of our country, were performed by persons unqualified by education or practice to perform them, and even now there is great room for improvement in this respect. Serious and fatal mistakes, arising from carelessness and want of knowledge, are very common, and have made it desirable that some law regulating the qualifications of the pharmacist should be enacted in all the States. This has already engaged your attention, and action was taken in reference to it at the meeting in Chicago.

Another evidence of progress that should encourage us is, the multiplication of schools of Pharmacy in our country, and the promise of greater facilities for the education of pharmacists. In this connection, I will mention the new school of Pharmacy established at the capital of our country, under the direction of the Columbia Medical College. Chemistry, and botany, and other natural sciences, are much more popular as branches of education than formerly, and as this species of science is more diffused, the effect must be beneficial in the progress of our art.

In conclusion, I congratulate you on the influence of the American Pharmaceutical Association as contributing greatly to the advancement of Pharmacy.

Dr. Frederick Mahla, the chairman of the Committee on the Progress of Pharmacy, being absent, the Secretary read portions of his report, which on motion was referred to the Executive Committee for publication.

The report of the Committee on the Constitution and By-laws being called up, the chairman, Mr. Colcord, made the following remarks :

MR. COLCORD.—The Report of the Committee on Constitution and By-Laws is based on the Report of the Business Committee last year. This Committee looked the thing over pretty carefully, and have made so many amendments to the Constitution and By-Laws that it is almost substituting a new Constitution and By-Laws for the old one, but you cannot call it that, because they must be looked upon in the light of amendments to the Constit-

tution; otherwise, those who signed the Constitution have not signed this one, and would all have to sign it again. I will remark, that this Constitution that has been distributed around has been revised again. It makes no difference that in this draft we make no reference to the old Constitution, for it is offered as an amendment, and is not offered as a substitute for the old Constitution.

MR. SHINN.—I wish to inquire if this printed copy contains that part of the old Constitution that is to remain.

MR. COLCORD.—It contains that which is to remain. It is part of the old, and part based on the recommendations of the Business Committee, but if we put in the references it would have made it so we could not handle it.

DR. SQUIBB.—This is the Constitution as amended.

MR. COLCORD.—Except a few amendments; as we progress in it, we shall have some amendments to this Constitution, and it will be offered according to this written programme. I cannot read very well. Mr. Maisch has written this so that he can read it better, and I think the shortest way would be to read the whole thing through first, and then take it up seriatim. I think we shall get along with it better that way, because if we go on with it seriatim from the first, we shall find something in the last of it that will cover the discussion on the first part of it, and thereby lose time, and perhaps have much needless argument.

The Secretary read the report of the Committee.

MR. TAYLOR.—In Chapter III, Article I, why not change the language to read "at or near the city." We may not be able to find a Local Secretary in the place where the Association meets.

MR. PROCTER.—I would like to suggest as a correction in Chapter V, Article V, the words "Local Secretary" should be "Permanent Secretary."

MR. MAISCH.—The Permanent Secretary is a member of the Executive Committee. The Local Secretary is correct here.

DR. SQUIBB.—I should like to make two suggestions. I think that in declaring the objects of the Association it is not well to have so much surplusage, particularly when the surplusage does a little harm. I would therefore suggest striking out the words (in the 5th section of Article I) after "to suppress empiricism," "as much as possible" as surplusage which is liable to do some harm. Then when you come to the portion of the Constitution which speaks of the nomination of the new presiding officer and the election of the new officers, I would like to see introduced there a phrase stating, at this moment the official year of the Association begins. That is in accordance with the suggestion of Mr. Sargent. I think it is a good one, and that it should be put in the By-laws, at the end of Section IV, Article III.

MR. KELLEY.—Is that the Report of the Executive Committee?

THE PRESIDENT.—No, it is a Report of a Special Committee.

MR. KELLEY.—I move that this amendment be made the special order for

this afternoon's session. As it now stands, it is in the hands of the Committee until the Association either accept or adopt it.

MR. COLCORD.—The shortest way is, if the Association has any suggestions to make, that they write them out and hand them to the Committee. I think that course will save time.

MR. CODDINGTON.—I don't know whether it is in order, but if there are going to be any amendments I have an amendment to Article III.

DR. SQUIBB.—These are suggestions to the Committee. As the matter is in the hands of the Association it is competent for members to suggest these changes to the Committee, and if the Committee do not adopt them they will report again as before; if the Committee choose to make the changes they will accept them.

MR. MAISCH.—Let the members meet the Committee after the close of the session. What is the use of taking up the time of the Association? We can meet immediately after dinner, if anybody has any suggestions to make.

MR. PROCTER.—If I understand it, the Committee have brought before the meeting the subject as perfect as they know how to do it. If there are any suggestions that will throw light upon the matter, now is the time to hear them.

THE PRESIDENT.—These are suggestions to the Committee, and not to the meeting.

MR. PROCTER.—How are the Committee to receive it?

MR. TAYLOR.—The best way is to accept this report. That will bring it before the meeting, and we can make such suggestions as we please and refer it again to the Committee, and they can reconsider it and bring it up as a finished report.

The motion to accept the report was carried.

MR. TAYLOR.—It is now before the Association properly, and any corrections, or amendments, or suggestions, are in order. I have one which I suggested a little while ago. That is in Chapter III, page 8, and has reference to the Local Secretary. "The Local Secretary shall be elected annually, near the close of the Annual Meeting, and shall be a resident of the city at which the next Annual Meeting of the Association is to be held." I think there may be difficulty under this Article in getting a Local Secretary. We may want to meet where we have no members; therefore I think it would be well to say the Local Secretary "shall be a resident at or near the city" where the next meeting shall be held.

MR. KELLEY.—Do I understand this report is now taken up by the Association?

THE PRESIDENT.—It has been accepted.

MR. KELLEY.—Do we take it up for adoption?

THE PRESIDENT.—Yes, sir.

MR. KELLEY.—Then I move we adopt it.

MR. EBERT.—The Committee that is considering the President's Address will probably report some suggestions that ought to go before this Committee. If we now revise this Constitution and By-laws, and then this Committee comes in with its suggestions, it will make double work. Why would it not be well to hear the report of this Committee and then go on?

MR. COLCORD.—That report will not be ready until to-morrow or next day. It has not been digested, and nothing has been agreed upon. This report contains nearly everything that the President recommended.

MR. EBERT.—I have noticed a number of things which the President recommended, which are not in this report at all.

MR. COLCORD.—In reference to the laws?

MR. EBERT.—In reference to the By-laws and Constitution.

MR. HAVILAND.—I move the report be recommitted to the Committee. Then they can bring it in at any time when the alterations are completed.

MR. TAYLOR.—The object of bringing it before the Association was to get the suggestions or alterations from the members here who are outside of the Committee. If the members have any alterations or suggestions to offer, now would be the best time, and then refer it to the Committee, and they will adopt such amendments as they think proper, and we can adopt it as a whole.

MR. COLCORD.—The Committee have got through with all the recommendations that they wish to make, and this is their report. Now if the Association has any alterations to make, the Committee want them to make them; but if they refer it to them they will make such alterations as are desired and report it again. If we are to reconsider and report again, we want to know what the Association desires us to report.

Dr. Squibb moved that the report be now recommitted to the Committee to receive and consider such suggestions as members may have to offer, and that the Committee, at a subsequent session, again present their report, with such amendments as they may deem desirable. The motion was carried and the report recommitted accordingly.

The Secretary read the following report on legislation relating to the practice of Pharmacy during the last year:

TO THE OFFICERS AND MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION:

At the fifth session of the Seventeenth Annual Meeting the following resolution was adopted:

Resolved, That the report of the Committee embracing the proposed draft of a law, of the action had in this Association upon that report, and of these

resolutions, be printed in pamphlet form, and that ten copies for each State be sent to the Governors and the Speakers of the Legislatures of the different States of the United States.

The Secretary attended to the duty imposed upon him by this resolution; the pamphlet, a copy of which is herewith presented, was published, and early in November, 1869, the following letter was addressed to the Governor of each State.

HIS EXCELLENCY, the Governor of ——.

SIR: In compliance with the direction of the American Pharmaceutical Association, I have this day sent to you several pamphlets entitled *Draft of a Law regulating the Practice of Pharmacy, &c.*

You will observe from these pamphlets that I am also directed to send some to the Speaker of each House of the Legislature of your State, and in view of the importance of the subject, am desirous of faithfully carrying out these directions, for which purpose I respectfully invoke your assistance in this, to inform me how I can reach these officers of the Legislature.

Hoping that the subject-matter of the pamphlet may claim some of your attention, I am, very respectfully,

Your obedient servant,

JOHN M. MAISCH,

Permanent Secretary American Pharmaceutical Association.

Most of the Governors replied to this letter, giving the desired information, and the remaining copies of the pamphlet were sent in accordance with the instructions received. In a number of states the legislatures did not meet during the past year; in many of the others the papers were quietly laid aside, but in some sufficient interest was manifested in the subject, and the pamphlets were, by the Speaker, handed to some member of the legislature. The Secretary is well aware from his extensive correspondence on this subject, that in several states there is a strong inclination to pass such or a similar law; in most instances, however, it had to give way to other subjects of equal importance.

The honorable Secretary of State of Rhode Island, John R. Bartlett, has shewn a deep interest and recognized the importance of a law on the practice of Pharmacy, and it is undoubtedly in part due to his exertions that on the 31st of March, 1870, a law was passed by the General Assembly of Rhode Island, entitled "An act to regulate the sale of medicines and poisons." It forms Chapter 856 of the Public Laws of that state, and an official printed copy of it was received through the kindness of the honorable Secretary of State. This law is based upon the draft which was discussed at the Seventeenth Meeting; in 18 sections it contains all the main provisions of the latter, but it is shorn of much of the complexity of our draft. The Pharmaceutical Board is composed of seven members, to be appointed triennially by the Governor (there being no Pharmaceutical Association in the state), its Secretary is to act as registrar, and the annual report to the General Assembly must contain the names of all the registered pharmacists. In case

of suspected adulteration of medicines, the Pharmaceutical Board must have made an analysis of the suspected articles, and a conviction of the offence forfeits all the adulterated articles, deprives the offender of his license, and makes him incapable of practicing thereafter as a pharmacist in Rhode Island. The schedules are the same as those attached to our draft. The Pharmaceutical Board of Rhode Island has been appointed, and consists of Albert L. Calder, O. Sumner, N. S. Mason, and Wm. B. Blanding, of Providence, B. P. Clapp, of Pawtucket, Rob. J. Taylor, and Philip Casewell, Jr., of Newport.

The law proposed by the New Jersey Pharmaceutical Association follows our draft very closely, but the registration is, without the appointment of a registrar, intrusted to the Pharmaceutical Board, and an annual registration is not required.

Through the exertion of the apothecaries of Baltimore, and more particularly of the Maryland College of Pharmacy, a law entitled "An act to prevent incompetent persons from conducting the business of druggist or apothecary in the City of Baltimore" was passed, which though its scope is more confined, will effect its object if faithfully carried out. That such will be the case, may be expected, since the Maryland College of Pharmacy has to nominate biennially ten of the most skilled and competent pharmacists of Baltimore, out of whom the Governor appoints three commissioners. The following are the commissioners who have been appointed and qualified: J. Brown Baxley, Louis Dohme, and Richard Sappington. The passage of this law, which has been well received by the people of Baltimore, has already had the salutary effect in preventing the opening of new or the acquisition of older pharmacies in Baltimore, by several incompetent persons, whose examination proved unsatisfactory to the commissioners; and the pharmacists are sanguine that before many years have elapsed, the provisions of this act will be extended over the entire State of Maryland.

Your Secretary was a member of the Committee who framed the law which was before the Association last year. It is but natural that he should feel an attachment to the result of the protracted labor of that Committee; but he is free to confess that the law enacted in Rhode Island is by far less complicated, and therefore is better adapted to overcome the objections urged by some legislators against our draft, which, it cannot be gainsaid, is very complicated. Complexity, however, cannot be avoided when we aim at a law covering as nearly as practicable the entire practice of pharmacy; in fact, there are various points which were freely discussed in the Committee of 1868, the incorporation of which was not deemed prudent. The first step to gain a practical foothold, alike beneficial to the true pharmacist and to the public, is probably the one so successfully urged by our Baltimore friends, and it seems but prudent to point to the importance of securing this foothold rather than to jeopard the cause by persistently insisting on a law covering more ground, particularly if this first step can be surrounded with such guarantees that will insure the strict compliance with all the legal provisions.

Two states of our Union have set the example of initiating reformatory measures in the practice of pharmacy; in both the subject began to assume

a definite shape after it had been brought before this Association in 1867. The result achieved must certainly inspire us to perseverance. In several states, the correspondence of your Secretary will show, the matter has not been dropped but merely postponed; it seems, therefore, to behoove this Association to keep it constantly in view, and to be prepared to offer advice whenever desired. In some of the states where the legislatures meet biennially, the subject is likely to be brought forward during the coming session, while others, who place no restriction whatever on the practice of pharmacy, will gradually follow. To secure as nearly as possible uniform legislation in the different states on this subject, to watch the effects and the practical working of the laws already enacted, and to compare their relative merits and demerits, there appears to be no better way than to annually appoint a Committee on Pharmaceutical Legislation, whose duty it would be to watch legislative enactments in the different states in all their various phases, and thus be the means of sifting the practical facts from the unfeasible plans. The appointment of such a committee is respectfully suggested.

The laws of the two states referred to above, most likely do not comprise all the laws of importance to the pharmacist. The legislature of Pennsylvania passed a law which was approved on the 16th day of March, 1870, and is entitled "An act to prevent and punish the publication of obscene advertisements and the sale of noxious medicines." The noxious medicines are such intended to prevent conception, or procuring abortion or miscarriage, and the obscene advertisements refer not only to these medicines, but also to those for the cure of secret or venereal diseases, and those diseases peculiarly appertaining to females. This law, although it has been on the statute-book for six months, has never been enforced, nor has, in any part of the state, any attempt been made to enforce it.

In conclusion, your Secretary would suggest that he be instructed to publish the three laws enacted since our last meeting, since thereby they will be accessible to many, and will be useful in inviting comparison; moreover, they all contain some excellent points, the publication of which is likely to be the means of preventing a great deal of harm.

All of which is respectfully submitted.

JOHN M. MAISCH,
Permanent Secretary.

The report was on motion accepted, and the Secretary directed to publish in the Proceedings the laws relating to pharmacy, passed in the several states since the Seventeenth Annual Meeting.

On motion of Dr. Squibb, the other suggestions contained in the Secretary's report, just read, were referred to the Committee on the President's Address.

MR. TAYLOR.—I will state to the Association that Dr. Squibb has some

specimens which he wishes to exhibit, and some reports to make, and a paper to read; and I would ask whether it be the pleasure of the Association to appoint 12 o'clock to-morrow to hear his paper. It is desirable that the time should be specified, as there are some medical gentlemen who would like to hear it read.

DR. SQUIBB.—The papers to which the Business Committee have alluded are, one of them, a volunteer paper upon Fluid Extracts and their Menstrua, and the other a note on Rhubarb, for this year, in addition to notes presented to the Association in former years; and I have been asked to communicate what I know on the subject of Chloral. I have not had time to write a paper upon it. I believe I am one of the only two manufacturers in the country who make it, but I have no secrets about it, and am very willing to tell the Association all I know about it, if it be the pleasure of the members, as has been suggested, to hear it. That I may be prepared for this, and have the two cases of rhubarb brought down to illustrate the note, is the reason why I want a specified time. It is not my desire to interfere with any other business of the Association. If an important matter should come up and be under discussion at the time appointed for this reading of mine, I should be sorry to interrupt it, but I wish some time fixed when my cases can be brought down and got out of the way of the Association before any other business comes along.

The motion of the Business Committee that Dr. Squibb have the floor to-morrow, for the reading of papers and exhibition of specimens, was agreed to.

The Business Committee moved that a Committee of three be appointed to consider the time and place of the next annual meeting, and to report at a subsequent session. The motion was carried, and the President appointed Messrs. Henry Haviland, of New York, Thomas Whitfield, of Illinois, and Fleming G. Grieve, of Georgia.

The Business Committee moved that a Committee of three be appointed to examine and report upon the specimens on exhibition. The motion being carried, the President appointed Messrs. William S. Thompson, of Baltimore, William T. Wenzell, of San Francisco, and George F. H. Markoe, of Boston.

Mr. Albert E. Ebert, chairman, read the report of the Committee on Queries, as follows:

The Committee on Queries report the following list for the ensuing year, with the names of those who have accepted them for examination:

1. Are the preparations of Rennet identical with those of pepine, and can the former be prepared only from the fourth stomach of the calf?

Accepted by Clemmons Parrish, of Philadelphia.

2. How may Camphor be reduced to a fine powder, and retained in the pulverulent condition?

Referred to John C. Lowd, of Boston, Mass.

3. An examination of the Extracts of Meat of commerce. What is the actual nutritive value of the preparations, and how do they compare one with another?

Accepted by Albert E. Ebert, of Chicago.

4. What proportion of mercury is contained in the Blue Pill of the market?

Accepted by Charles H. Bassett, of Boston.

5. What is the quality of Beeswax of the market, and what are the best means of detecting its adulterations?

Accepted by John J. Thomsen, of Baltimore.

6. To what does Poke Root (*Phytolacca Radix*) owe its activity? Can the active principle be isolated?

Accepted by J. F. Hancock, of Baltimore.

7. Ammonio-Citrate of Bismuth loses its solubility to a great extent by age. Can any other salt of bismuth replace this in the desirable quality of solubility, and at the same time be more stable in composition?

Accepted by Prof. George F. H. Markoe, of Boston.

8. To what extent are the Essential Oils adulterated or sophisticated? How may impurities be detected?

Accepted by William S. Thompson, of Baltimore.

9. Glycerine of various grades is furnished by the manufacturers. In what respect do they differ? What are the usual impurities of glycerine, and what are the best practical tests?

Accepted by Joseph P. Remington, of Philadelphia, Pa.

10. What is the best practical method for making Suppositories extemporaneously?

Accepted by R. B. Ferguson, of Washington, D. C.

11. Is a liquid preparation of Hydrate of Chloral desirable? If so, what is the best vehicle to preserve it from change, and render it agreeable for administration?

Accepted by Prof. George F. H. Markoe, of Boston.

12. Pancreatic Juice has been highly recommended to assist the assimilation of fat in the human stomach. In what manner is the fluid obtained, and what permanent preparation of it can be made that will be suitable for administration?

Accepted by J. H. Hancock, of Baltimore, Md.

13. To what extent are the oils of peanut, cotton-seed, mustard-seed, or others, sold for Olive Oil? And how can they be readily detected when so substituted?

Accepted by H. N. Rittenhouse, of Philadelphia, Pa.

14. What is the active principle of Wahoo Bark (*Euonymus atropurpureus*)?

Accepted by Charles E. Dohme, of Baltimore.

15. Are the California Wines and Brandies suitable for medicinal use? Are the wines and brandies now supplied to the Atlantic cities from California as good as can be obtained from that source?

Accepted by William Searby, of San Francisco.

16. What system of apprenticeship to Pharmacy is adaptable to this country? What amount of preliminary education should be required of such apprentices, and what means should be employed to render their apprenticeship profitable to themselves and satisfactory to their preceptors?

Accepted by S. M. Colcord, of Boston.

17. What quantity of Castor Oil is produced annually in the United States, and to what extent is the American oil put up in packages and sold in imitation of the East India Oil?

Referred to Francis X. Crawley, of St. Louis, Mo.

18. To what extent may traffic in Fancy Goods, Liquors and Cigars be regarded as compatible with legitimate Pharmacy?

Accepted by Samuel Campbell, of Philadelphia, Pa.

19. Tincture of Blood-root deposits a sediment upon standing. Is the activity of the preparation thereby impaired, and is there a more suitable alcoholic strength for this tincture?

Accepted by Louis Dohme, of Baltimore, Md.

20. Does the commercial Subcarbonate of Iron of the market conform to the requirements of the United States Pharmacopœia? If not, in what respect does it differ?

Accepted by P. W. Bedford, of New York City.

21. Granulated Effervescent Compounds are sold by druggists under popular names, and the demand for them is constantly increasing, yet these compounds are known to be different from the preparations represented by the labels. Give a practical process for the preparation of such as are believed to possess merit.

Accepted by Samuel Campbell, of Philadelphia, Pa.

22. Is Tincture of Opium as usually dispensed uniform in morphine strength? What range is covered by the differences existing in samples obtained from reputable sources?

Accepted by L. M. Rice, of New York City.

23. What are the best containers, or what other precaution can be devised for Poisonous Drugs, to lessen the liability to mistakes in dispensing or handling them?

Accepted by W. C. Bakes, of Philadelphia.

24. The purity of commercial Tartar Emetic has been questioned. To

what extent, if at all, is the article impure, and in what respect does it usually fail to conform to the officinal standard?

Accepted by Joseph P. Remington, of Philadelphia, Pa.

25. What medicinal articles are in popular use among the Indian tribes, and what properties are ascribed to such as are unknown to commentaries?

For general acceptance.

26. Is there a practicable and cheap process of isolating Cantharidin? And in what proportion should it be substituted for Cantharides in the various vesicating preparations?

Accepted by Albert E. Ebert, of Chicago.

27. An article has been introduced into the market under the name of African Saffron. What is its source and botanical history?

Accepted by John M. Maisch, of Philadelphia.

28. Spirit of Nitrous Ether varies greatly as obtained from different manufacturers. By what practical process may the proportion of Nitrous Ether in the spirit be estimated, and is the alcoholic strength of the United States Pharmacopœia a proper one?

Accepted by F. Mahla, of Chicago.

29. The Aromatic Sulphuric Acid of the United States Pharmacopœia is objectionable, in that it deposits upon standing, and when diluted with water, resinous and coloring matter separates. How can the formula be modified to overcome these objections?

Accepted by Thomas Doliber, of Boston, Mass.

30. Medicated and Aromatic waters prepared by rubbing essential oils with Carbonate of Magnesia, are found to contain soluble salts, derived from the magnesia. What substance can be substituted for the magnesia that will furnish a water free from foreign matter.

Accepted by S. A. D. Sheppard, of Boston, Mass.

31. What proportion of Magnesia is contained in the solutions of Citrate of Magnesia as obtained from different sources, and how do these solutions differ from the officinal?

Accepted by Prof. George F. H. Markoe, of Boston.

32. In what respect does deodorized tincture of Opium differ from the "Elixirs" of Opium in the market? The tincture prepared by the United States Pharmacopœia process gradually deposits a dark-colored sediment. Are any of the active principles thrown down in connection with the deposit?

Accepted by Charles E. Dohme, of Baltimore, Md.

33. What is the comparative value of Carbolic Acid, and other disinfectants and antiseptics? Which are the best disinfectants for general use?

Accepted by Edward C. Jones, of Philadelphia.

34. Prof. Wormly has isolated two active principles from the yellow Jessamine (*Gelsemium sempervirens*); one of which he calls Gelsemina, and

the other Gelseminic acid. How may these principles be isolated in quantity? What is the antidote to the poisonous effects of this drug?

Accepted by Joseph M. Hirsh, of Chicago.

85. Is the ordinary commercial Alcohol of the market sufficiently free from fusel or grain oil for Pharmaceutical use?

Accepted by N. Peirpoint, of Young America, Illinois.

86. It is found that ordinary menstrua do not hold the polygalic acid of Senega in solution, and that well-made fluid extracts of Senega from good specimens of the drug are liable to gelatinize in cold weather. What menstruum is best adapted to use for holding all the active principles of Senega in permanent solution, and excluding pectin and other useless substances?

Accepted by N. H. Rittenhouse, of Philadelphia, Pa.

87. What is the best formula for Solution of Citrate of Magnesia? Can a permanent solution of it be made?

Accepted by E. H. Sargent, of Chicago.

The Report was, on motion, accepted, and referred for publication.

Mr. William S. Thompson asked to be excused from serving on the Committee on Specimens, his time being occupied in assisting the Local Secretary. He was, on motion, excused, and the President requested to appoint another member in his place.

The Chairman of the Business Committee read from page 87 of the Proceedings for 1869 the following report:

The Business Committee, to whom the report of the Committee on the Progress of Pharmacy was referred for consideration, report that the suggestions of Dr. Hoffmann appear to the Committee to be worthy of the careful consideration of the Association, and would therefore offer the following resolutions, not to be adopted at present, but to lie over until the next Annual Meeting of the Association:

Resolved, That the Committee on the Progress of Pharmacy shall consist of three members, who shall be elected every three years, to serve for a period of three years; and that the subject upon which they report shall be divided into three parts, one part of which shall be reported upon by each member of the Committee.

Resolved, That the report of this Committee, in addition to being printed in the Proceedings of the Association, shall be published separately in book form.

These resolutions involve a change in the Constitution, and should be adopted or rejected at the present meeting, so that they may come properly

before the Committee who are now revising the Constitution, and can be incorporated in their report. These propositions were brought out at the last meeting, and the Association is competent to act upon them.

MR. SHINN.—This provides for three subdivisions of the subject.

MR. TAYLOR.—The Committee on the Progress of Pharmacy shall consist of three members, each one to prepare a portion of the report.

MR. SHINN.—That separate portion might consist of one, two, or more subjects?

MR. TAYLOR.—Yes, sir.

MR. PROCTER.—Any action on this would be virtually an instruction to the Committee on the Alteration of the Constitution.

THE PRESIDENT.—I suppose the best way would be to refer it to that Committee, and let it be acted upon altogether.

The resolutions, as read, were, on motion, referred to the Committee on the Constitution and By-laws.

MR. EBERT.—There is a Committee on Unofficial Formulas, consisting of Mr. Markoe, Moore, and myself. That Committee has failed to make any report for two years. I do not wish to be on a committee that is not going to do any work. If the chairman of that Committee cannot do the work that is assigned to him, he had better resign, and let some one else do it. We come here every year without a report, and it is the fault of the chairman of the Committee. We are good friends, but still I find fault with him for not having a report.

MR. MARKOE.—I plead guilty to that charge, and would say in extenuation that the great amount of labor imposed upon me by my Professorship in the Massachusetts College of Pharmacy, has occupied my time so fully as to leave little or no opportunity for the work. I am willing to take the chief share of the blame, but at the same time I think it is no more than fair to distribute some of it to the other members of the Committee, whom I have repeatedly asked to furnish me with the Unofficial Formulas in use in their locality. As there are very few used in my district, I thought it would be of little value to give what few we have in Boston. I beg leave to resign the chairmanship, as it will be impossible for me to attend to it with the work I have to do for Pharmacy in Boston.

DR. SQUIBB.—This calls to mind the remarks I have made as to one-man committees. I think if we trusted more to one man we should get along better. I move, in connection with this subject, that the first name on this Committee be dropped for the present year, and the second name be considered the Committee for the forthcoming year. He will probably report the Unofficial Formulas of his neighborhood next year. Then let a new member, Markoe, for instance, be put on the next year, and let him report the next year; then the third year, let the third member take it. It is impossible, as I know from my own experience, absolutely impossible to com-

municate through the mails, so that a committee can work intelligently on a subject like this. I don't think any just blame is due to any members of the Committee. The difficulty is caused by the complexity and additional labor which is required of writing through the mail, and having the formulas reported from one to another of the Committee and to the chairman, whose duty it is to epitomize them and get them into proper shape to report. The labor which necessarily devolves upon the chairman of such a committee in the preparation of a satisfactory report, is too great for one man to undertake. I therefore move that the Committee for the next year consist of one man, and that it be Mr. Ebert, of Chicago; and that it be understood that he is only expected to do what he can easily do, report the Unofficial Formulas of his neighborhood. Then let Mr. Markoe be fixed upon by the Association as the person to bring forward the Unofficial Formulas of his neighborhood for the next year, which would not be a great labor to him, and would get us some report the next year.

MR. EBERT.—I would wish to resign on that Committee. I furnished Mr. Markoe, the chairman of the Committee, with the Formulas of our section, or I referred him to where he could find them. They are published, and all that was necessary for him was to copy them. That is the fault I find. He has not corresponded with me; and as we came here every year without making a report, I felt as if I had not done my duty. I have always tried to do my duty towards the Association, but I would like to be relieved, and have nothing to do with it.

MR. MARKOE.—That would be throwing on the chairman the labor of collecting the Formulas through all the publications of the West. I would very gladly furnish the Unofficial Formulas in use in New England.

DR. SQUIBB.—If Mr. Ebert desires to be excused, I don't like to force it upon him. I will modify the motion: that the Committee on Unofficial Formulas shall consist of one member, and then let the Association appoint that member.

MR. PROCTER.—Is it proposed to limit him to his district? Suppose he is an industrious man?

DR. SQUIBB.—Let us limit him. I propose to limit him to his own section, because we have failed on the other plan.

MR. TAYLOR.—Let us say that he shall furnish the Unofficial Formulas of his district, and if he chooses to put in more he can do so.

DR. SQUIBB.—It is understood this is not a standing committee; it is a special committee. Therefore, my suggestion that it shall consist of one man is only for this year.

The motion of Dr. Squibb that the Committee on Unofficial Formulas consist of one member was carried, and the President appointed Professor J. Faris Moore on that Committee.

In the place of Mr. William S. Thompson, the President ap-

pointed Mr. J. Brown Baxley to serve on the Committee on Specimens.

MR. MALSCH.—It is desirable to have some member from Baltimore, as the Committee may not get through during the session. It has always been the custom to have some one from the place of meeting.

MR. BAXLEY.—I think the Secretary is mistaken. I would refer to the meeting held in New York, where Mr. Sargent, of Chicago, and myself, and another gentleman, not from New York,* formed that Committee, and the report was very elaborate, and was made without the aid, as a member of the Committee, of any member from New York, although we did have the assistance, otherwise, of several gentlemen of that city.

DR. SQUIBB.—This matter of the report on Specimens is going to grow into a good deal of importance, and I think it is of a great deal of importance that a judicious report be made, that there be no suspicion of advertising or favoritism to one depositor over another; and I think, under these circumstances, as the collections for exhibition partake largely of a local character, and must always do so, and must always belong in a measure to the place of meeting, that it might be well to omit from that Committee members from the place of meeting, who are more interested in the exhibition than others from distant places perhaps. I think it is an important Committee, and it is very important that it should report judiciously, and report in brief instead of detail; and therefore I hope that the precedent established in New York may not be a bad one.

The President named Mr. Ferris Bringhurst, of Wilmington, Delaware, as a member of the Committee on Specimens.

The Business Committee suggested that the reading of Essays in answer to Queries be proceeded with. The Queries were called up in their regular order, and the following were, for the present, disposed of.

When Query No. 4, on the Action of Insect Powder, was called up, the Secretary said:

I have a letter from Dr. Garrigues, in which he asks to have that Query continued for another year. I know he has been away from his home for a considerable time, and was unable to come here.

The subject was, on motion, continued to Dr. S. S. Garrigues for another year.

Queries 5 (on *Eupatorium perfoliatum*) and 6 (on *Glycyr-*

* Mr. F. V. Heydenreich, the third member of the Committee on Specimens, in 1867, is from Brooklyn, opposite New York City.—**SECRETARY.**

rhizin), also No. 8 (on Relation of Mannite to Glucose) and No. 16 (on Filters), accepted by Mr. Joseph Hirsh, of Chicago, were called up.

MR. EBERT.—I met Mr. Hirsh just previous to coming, and he promised to send me his papers. He said he had nearly finished them, and promised to send them to the store. I have since written to him to send them here, and they may still arrive while we are in session.*

Regarding Query 9, on the Effect of Soap in the Compound Extract of Colocynth, Professor Markoe said:

MR. MARKOE.—That was referred to me. I did not accept. It was a mistake referring it to me, and my first knowledge of it was seeing it in print.

The query was, on motion, dropped.

The subject of Wild Cherry Bark, of Query 13, had been accepted by Mr. Joseph L. Lemberger.

MR. LEMBERGER.—I have a partial report on that query, but did not expect to report on it this morning. If you will allow me, I can make a verbal report to cover the substance of what I have to say. I have had prepared an infusion for every month from April to September, inclusive, and have prepared specimens of the syrup, which are on exhibition in the specimen-room, and which it may be interesting to the Association to examine. I do not think the investigation is at all complete, because it was my purpose to make an examination of the bark in every month of the year, and I feel persuaded that that will be the only way to do to arrive at any satisfactory conclusion. In addition to what has been done, I would ask for the continuance of that query to me for another year, and will endeavor then to make a more full report at the next session.

The query was continued to Mr. Lemberger for another year.

Query 14 referred to the adoption of Avoirdupois or Metrical weights by the United States Pharmacopœia; Mr. Milhau, the acceptor, said:

MR. MILHAU.—The Committee on the Revision of the Pharmacopœia having decided to do without either of these systems of weights, I thought it would be perfectly useless to make a report concerning them.

* The Essays arrived in Baltimore the morning following the adjournment of the meeting; and, considering that the Association adjourned on the third day, while in former years sessions were often held on the fourth day, the Executive Committee concluded to print them in the Proceedings.—SECRETARY.

The Foreign Opium Trade of the United States and the Domestic Production of Opium, is the subject of Query 15, and was accepted by Mr. P. W. Bedford, who said :

MR. BEDFORD.—I have no report to make on that subject. It seems the cultivation of the poppy in the United States is so very limited, that it has no effect whatever on foreign trade. For that reason I do not think the query applies to the present time.

Query 19, on *Gillenia trifoliata*, was accepted by Mr. A. E. Ebert, who made the following statement:

MR. EBERT.—I would like to make a verbal report. Some four years ago, I think it was, when I accepted that query, I obtained a root which seemed at that time a very fine specimen, and made a number of experiments with different preparations of the root (the extract and liquid preparations) in regard to its emetic properties. I could not produce any emetic properties on myself or the young men at my store, and I concluded from that that it must be a poor article. On my leaving the country the query was dropped from the list, and last year I again accepted it. During my trip East I tried to procure the root both in the New York and Philadelphia market, but was not successful in obtaining any specimen of it. I also wrote to Cincinnati, but was unable to find any of the root in that market, so that I have been unable to procure the article for making any further investigations. I have never seen, nor have I heard of any one that has ever known of the root being used. I accepted it at that time, because I had formerly given it some consideration. If there is any value in it, I should like to continue it if I can get the material to experiment with.

MR. MAISCH.—I would state, from my experience, that there is no *Gillenia trifoliata* to be found in the market, but *Gillenia stipulacea*, and I believe that is plenty. I have always been able to procure it. That being a Western plant, I suggest that Mr. Ebert take that up, striking out the word "trifoliata," and inserting "stipulacea," and continue it. The two are said to possess the same emetic properties.

MR. EBERT.—I don't know that I shall be able to attend to it, as I have accepted two queries.

Several members stated, that they had prepared papers in answer to the queries accepted by them, but had left them at their hotel; the reading of such was postponed for a future session.

DR. SQUIBB.—It is rather a discouraging circumstance that with so many queries we are so fruitless in regard to replies. I think not over eight or ten of these queries may be expected to be answered at this meeting. It seems the committees with all their trouble are far more fruitful in finding

very important queries than in getting them answered. I do think some expression by the Association should be made throwing some little blame on gentlemen who accept these queries and do not answer them. For my part, I have a good deal of trouble in avoiding the acceptance of them, but I always succeed if I undertake it, but if I did accept them I should feel bound in some measure to answer them. I think the laxity and leniency the Association shows to gentlemen who neglect this work is begetting an effect which we shall afterwards regret. We get a large number of queries, many of which can be answered by a moderate amount of labor, which the members seem entirely to neglect. How shall we distribute the labor better than by the offer for acceptance of a list of queries like those which have been read, and how shall we insure answers to the several queries. I should like to see the Association express its sense of blame towards gentlemen who accept these queries and yet give them the go-by when a small amount of labor would accomplish the result we expect of them.

MR. RITTENHOUSE.—The same idea occurred to me, and I would suggest for want of something better that a blank form be prepared and given to the Committee on Queries, that they may send it to the acceptor of each query at some time previous to the meeting, and have some sort of a reply, either an answer, or some good reason why the queries are not replied to. It would give the thing more of an official character and might stimulate the members to accomplish their work.

DR. SQUIBB.—It will not accomplish the effect, however, because the difficulty lies away back in the motive of the acceptor. It has not been uncommon in past years to see several gentlemen's names appended to several queries as having accepted them, and it is very rare to find those gentlemen who accept so many answer any; or if they do, it is in a very brief way. It is to those gentlemen I address myself in the way of blame. I do think it is blameworthy for gentlemen to accept two or three queries and then come here without an answer to a single one.

MR. PROCTER.—I wish to say it is very unusual for the queries to be called for at the second session, and I really have faith to think that when the afternoon session comes, that many that are supposed to fail will be produced. Just as this matter came up, a great many left the room, probably to go up to the exhibition-room, and if they had been here, they could have stated distinctly whether they had, or had not, done anything. So things may not be so bad after all.

MR. EBERT.—I think the suggestion of Mr. Rittenhouse is a good one. The chairman of that Committee ought to be to some extent a stimulus to get members to answer questions; he ought to look after them, and if a blank form was printed by which he could reach those members, and occasionally send to them, even once in three months, and remind them that it is their duty to be ready with their replies, I think it would have a good effect. There are a good many people who will do their duty if you remind them of it, and there are some, like Dr. Squibb, whom you don't have to

remind. There are some who let matters lay until the last moment. I am one of those, and if I was told several times during the year, I might use my spare moments and do it. I think, if a blank form was given to the chairman, and he would use his influence, we might have more papers; we certainly should have an answer whether they had attended to the subject or not.

DR. SQUIBB.—My impression is that if we attempt to dragoon people we will get no good results. I have seen it tried, and I have seen a member come without an answer and sit at the table and write one while the business was going on. The amount of confidence I would put in a paper so written may be imagined. I think these things cannot be done by force. If a gentleman accepts a query and does it with the intention of answering it, and afterwards gets lazy about it, any dragooning brought upon him by the Committee would be so much labor expended by the Committee, but whether the result would be certain or satisfactory I think is very doubtful. It is a question of motive, and of the interest that a man feels in a subject; and I have noticed that those who suggest queries and then accept them because they have an interest in them and feel a disposition to investigate the subjects they had suggested, are most likely to answer the queries. Under the present practice the Committee has a good deal of trouble in getting gentlemen to accept the queries; gentlemen accept them too loosely, with too little consideration, and when they find the amount of labor that is required to properly investigate them, neglect them entirely; whereas, if fewer queries were proposed, and no force or dragooning were applied to anybody, but the Committee left them to voluntary acceptance or referred them to the movers or proposers, it would give us fewer to read over, and less anticipations to be disappointed when we come to hear the answers. I have often been very much interested in looking over the Proceedings to hear the answers that will be given to certain queries, and it is a great disappointment (I judge everybody else by myself because I know it is a natural instinct) to find that these very questions that I have been treasuring up in my mind as giving me some information I desired are neglected, and that we get an excuse from some source, but no report whatever.

MR. RITTENHOUSE.—Many of the queries that are given are very important. I think (I am not quite sure, and I do not want to be too pointed in my remarks) I know of an important query being given by the Association, and a party took it and investigated it, but made no report. I think I know he did not because it developed a profitable field for him. The idea originated in this Association, and it seems to me it was the property of the Association, but it was not reported upon because there was money in it.

DR. SQUIBB.—That is a legitimate fruit of the influence of this Association.

MR. RITTENHOUSE.—The query is the property of the Association, and the answer should also be the property of the Association.

DR. SQUIBB.—That depends upon circumstances.

MR. EBERT.—One suggestion in reference to these blanks is this: we do

not publish our Proceedings until about four or five months after the meetings, and parties who have accepted these queries forget all about them until their Proceedings get to them. If they had a little strip given them at the time, or sent soon after the close of the meeting, they might get to work at it at that time, but they put it off until the Proceedings reach them, and having let them go so long put them off altogether.

Mr. Albert E. Ebert read a volunteer paper on Glycerin, written by Mr. Joseph P. Remington, which was referred to the Executive Committee.

DR. SQUIBB.—I would like to ask whether in testing for odor by warming, it was diluted; whether it was glycerin and water that was warmed?

MR. REMINGTON.—No, sir.

DR. SQUIBB.—That extends the test. By taking one part of glycerin and one part of water, the vapor of water carries the odor very distinctly. It refines the test very much, and it is about the best test I know of for odor. I would also like to ask whether he tested specially for formic acid. It has been suggested that the irritating properties of the cheaper glycerins depend upon formic acid, and some do produce such an irritant action when applied to the skin, or to the ordinary uses in medicine, as to give rise to a suspicion that some irritant substance like formic acid was present.

MR. REMINGTON.—Mr. Bower, who has experimented very largely on the tests for glycerin, has recommended the nitrate of silver as the best test for these fatty acids, for formic acid and other organic acids present in glycerin, and the test for nitrate of silver, I think, if any organic acids were present, would cover that point.

MR. MAISCH.—Was the nitrate of silver test used with concentrated glycerin or diluted glycerin?

MR. REMINGTON.—Diluted. Each of them were diluted with the same proportion of water and then tested with a strong solution of nitrate of silver, the same solution in each case.

MR. MAISCH.—It is fair to suppose that any formic acid would have reduced the nitrate of silver.

DR. SQUIBB.—If the formic acid was in sufficient proportion or if sufficient time be allowed; but the proportion in this solution is very small indeed, and the dilution of the glycerin still further reduces it. The uses of formic acid as a counter-irritant show that it is irritant when extremely dilute. Some of the insane asylums have been using it as a counter-irritant, and the reports thus far have been favorable. Putting this in connection with the observed effects of impure glycerin, and with the fact that formic acid has been found in glycerin, I should suppose, of course, the proportion of formic acid might be very small and yet prove irritant; and when this proportion comes to be still farther reduced by dilution in testing, the question is not whether nitrate of silver would be reduced by it, but the time required to do

that. If the mixture be set in the light and allowed to stand for twelve hours it might be with a different result from what would be observed at the time of mixing.

MR. REMINGTON.—In regard to the De Hayes glycerin, I think that it has been rather vilified; it did not come up to the bad character it has acquired. The principal deficiency was in specific gravity. I think the specific gravity is a point that ought to be considered in purchasing. That was 1.245, and when they were together any person of ordinary ability could see by the appearance of the liquid when shaken, that it was deficient in specific gravity. It stood the nitrate of silver test very well.

DR. SQUIBB.—Mr. Remington appears to have omitted one of the largest brands in our market, and that is Merck's. This maker has for some years past offered, in New York mainly, a very large amount of glycerin, sold at moderate prices, which has proved to be pretty well adapted to a large proportion of the uses of glycerin. This glycerin is generally offered at a low price, and its physical properties are very good, though not to be compared with Price's and Bower's, and I am a little sorry that Price's glycerin was not included in Mr. Remington's investigations. I should like to have seen that compared critically with Bower's best. My impression is that Bower's best is almost unexceptionable. The specific gravity given by Mr. Remington of 1.258, very nearly agrees with some very accurate determinations I have made of the specific gravity; and I use a thousand-gramme bottle, whereby the errors are very much reduced. I made the specific gravity 1.2525, which is very near that of Mr. Remington—practically the same—and indicates a very good glycerin. The subject is very important, and it is well to have these tests published, because they will still further disseminate the means of knowing the good from the bad, with the exception of this irritant effect when applied to the skin, which effect does not seem to belong to any of the substances tested for. If the irritant be not formic acid, it is some similar substance, which might be detected and exposed. I should like to see the investigation still farther pursued, and as Mr. Remington has now a partial education in it and a taste for it, he is far better adapted to it than any new hand, and could still farther increase our knowledge on the subject by the next meeting.

MR. MAISCH.—There is a possibility that glycerin may contain acrylic acid, and that might be one of the constituents of the irritating glycerin. Glycerin undoubtedly requires to be distilled with the utmost care to avoid the formation of acrylic acid, and it would be worth while to search for that.

Mr. Wm. Wright, Jr., on behalf of the Executive Committee, presented the names of the following gentlemen as candidates for membership, they having complied with the requirements of the Constitution.

California.

John Calvert, San Francisco.
 James Frost, Vallejo, Solano Co.
 William Geary, San Francisco.
 John W. Moffitt, San Francisco.
 Emlen Painter, San Francisco.
 Edward J. Richards, Hayward.
 William Simpson, San Francisco.

Maryland.

Elijah Button, Annapolis.
 John W. German, Baltimore.
 Robert Lautenbach, M.D., Baltimore.
 Richard Sappington, M.D., "
 Henry A. Suding, "

New Jersey.

Albert P. Brown, Camden.
 William M. Littell, Newark.
 Alfred W. Test, Camden.
 Ransford W. Vandervoort, Newark.

New York.

Charles Rice, New York.
 Thomas Starr, "

Ohio.

M. Smith Hawkins, Salem, Colum-
 biana County.

Pennsylvania.

Philemon S. Reed, Philadelphia.

Virginia.

Thomas H. Hazard, Richmond.

DR. SQUIBB.—It was suggested two years ago, and I don't think it can be suggested too often, that great care is necessary in those members who indorse these applications for membership. I know, from my own experience, that it is very common to ask a member of this Association to indorse a name which he really does not sufficiently know. That is to say, he indorses him in a friendly way, but when cross-examined as to what he knows of the person, he will be obliged to acknowledge that he knows but little. I think the mere mention of this fact at every session,—that members should be very careful how they sign these indorsements of names presented to us,—will guard us against a great deal of trouble in the future. A man is asked whether he would like to be a member, with too little consideration as to whether he is a proper man to reciprocate the influences of the Association. The day for soliciting persons to become members of this Association, I think, has gone past. We can get plenty of members, and if they are the right kind, to give us their influence and help us in our labor, we are glad to receive them; but, I think, a word of caution is necessary to members to be careful who they indorse.

MR. WRIGHT.—I am very well satisfied that the Doctor's point is well taken.

The President appointed Messrs. Lemberger, of Pennsylvania, and Hall, of Virginia, tellers, who reported the unanimous election of the candidates.

Mr. Samuel M. Colcord read the following report:

The Committee appointed at the Eighteenth Annual Meeting, to examine the accounts of the Treasurer for the past year, respectfully report that they have carefully examined the same, and the vouchers thereunto belonging, and have found the same to be correct. They are happy to congratulate the As-

sociation on having its financial affairs in the hands of so faithful and able an officer.

S. M. COLCORD,
THOS. WHITFIELD,
W. A. PERKINS,
Committee.

The report of the Auditing Committee was on motion accepted, and the Committee discharged. The Treasurer's report was then on motion adopted.

On motion of the Business Committee, it was resolved that when the Association adjourns, it adjourns to meet at half past three o'clock this afternoon.

Mr. S. Mason McCollin being in the room, Query 12, on the Preparation of Pepsin, was again called up.

MR. MCCOLLIN.—I have not written a report on the query, but if it is allowed to lay over until next year I will give one. I have not been idle in regard to the matter. There are several points I am pretty well satisfied in my mind about which I should be glad to have time upon. I have examined a large number of specimens, and found them nearly all of a very inferior quality. My own conviction is, that the powdered form should not be recognized by pharmacists, but we should look forward to a liquid form, and one with glycerin as a preservative. I will make these few remarks in regard to it, and if you choose to leave it over until next year I will make a written report upon it.

DR. SQUIBB.—I would like to ask Mr. McCollin whether he has seen a recently published statement of the examination of commercial pepsins in Great Britain. Some competent authority there has gone over the subject and arrived at the same conclusions in regard to the pepsin in the form of powder to be found in the British market. The conclusions are, that most of the powders are worthless, and he distinctly states that some of the experimenters of known authority, who have condemned the use of pepsin, have used an article which contained no pepsin at all, and in this way he accounts for the adverse reports in regard to the value of pepsin as a therapeutical agent. I would like to refer him to that article in the Pharmaceutical Journal, or British Medical Journal, within the past two months. The experiments were made by the digestive power of pepsin on coagulated white of egg, and also on some forms of fibrin. The suggestion in regard to it in a liquid form I don't know enough about to dissent from, but the advantages of the powdered form are so great in weighing and measuring and in testing, that it will be well for him, I think, to examine that subject pretty thoroughly. That effective pepsin, in the form of starchy powder, can be made, is proved by Hawley and Boudault, and this form being so convenient and so far established now, it is questionable whether the advan-

tages of the liquid form can be made so apparent as to overthrow the accumulated experience in favor of the powdered form. My opinion is, it might be offered wisely in the two forms, and allow the liquid gradually to supersede the present powdered form. Physicians would not be slow to realize which is the best. It has been common for me to advise those who want to use pepsin to take the fresh stomachs from the animals when recently killed, and macerate them in sherry wine, in the same way that rennet for culinary purposes has been made for years; and I have heard of good effects from pepsin so made. The mere going to the butcher's and getting the rennet in a fresh condition, and cutting it up in the wooden chopping apparatus that every household has, and putting it into a pint of sherry wine, is a very easy and simple matter. This wine, given in doses of one-half to one fluid ounce, has seemed to produce a very good effect. We have authority for saying, however, that this preparation is wholly useless; that the liquid so prepared is not a pepsin preparation at all, because the alcohol of the wine destroys the pepsin; or if it has any effect it is due to the wine.

DR. HOFFMANN.—I would like to state that I have recently paid some attention to the same subject, and that repeated and comparative examinations of the French as well as of the American commercial dry pepsins, have satisfied me of the well-founded disfavor into which this remedial agent has fallen with the practitioner. Quite recently, moreover, Dr. Hager, in Berlin, has published, in Nos. 7, 8, and 21, of the *Pharmac. Central Halle*, two interesting papers on "Pepsin and its Medicinal Preparations;" in which he states that this remedy had been in discredit with him for a number of years, but that his attention had been drawn to pepsin anew by the remarkable efficacy of Schering's recently introduced "Essence of Pepsin," prepared from dried ostrich's stomachs, at the advice of Dr. Oscar Liebreich. Dr. Hager examined and gives in his paper the formulas of the French liquid pepsin preparations. He found none of them equal in efficacy to Schering's preparation. This dissolves, at the temperature of the human body, one-tenth of its weight of humid blood-fibrin within one hour. According to long experience, and to the numerous and recent statements of eminent practitioners and observers, there remains no doubt that pepsin, when properly obtained and prepared, is of great therapeutical value in cases where the secretion of gastric juice is either deficient in quantity or defective in quality, and that the discredit attributed to it is due to the inferior quality of the pepsin preparation, and to the defective mode of obtaining and preparing the same. It ought to be the aim, and lies in the self-interest of the pharmacist henceforth to remedy this difficulty, and to furnish the practitioner and the patient with a pepsin in the most judicious form of preparation. In order to secure this desideratum, I think it necessary to discard all amylaceous and similar so-called dry forms of pepsin. Being a remedial agent of no chemical stability, and perhaps in a state of continuous self-decomposition when in contact with organic substances and with the atmosphere, our dry amylaceous pepsins are subjected to constant and incidental degradation. Sooner or later they will lose all medicinal

power, and become totally inert. I believe that the best mode of obtaining and preserving the peptic principle of the gastric juice of the stomach is its incorporation into inactive liquid menstrua without any chemical treatment, as is the case in Boudault's process, and in that of the French code. The simplest possible menstruum, perhaps, may be a mixture of glycerin and water, with or without an addition of some percentage of alcohol, flavored with any artificial wine or fruit essence. The quantity of alcohol, however, ought not to exceed ten per cent., since a greater admixture evidently neutralizes the therapeutic action of the pepsin. The best mode of obtaining the gastric juice from the cleansed, fresh stomachs of the calf, pig, or sheep, perhaps, is to squeeze them repeatedly between wooden rollers. After all the juice has been squeezed and collected with silver spoons, the membranes are each time, before again passing through the rollers, brushed with a mixture of equal parts of water and glycerin. By this operation the membranes are thoroughly exhausted. The difficulty is to clarify the obtained peptic juice, and this is still an open question. According to our present experience, it may perhaps be best to add to the obtained juice a mixture consisting of twenty-five parts glycerin, two parts hydrochloric acid, eight parts alcohol, and sixty-five parts water, deprived of atmospheric admixtures by previous boiling. If desired, instead of this mixture good white wine may be added, although I think simplicity and chemical indifference of the menstruum a desideratum, in order to avoid any reaction between its constituents and the peptic principle. The mixture is then left in a very cool place, to deposit, in bottles entirely filled and well corked. When clear, it is decanted, the rest filtered, and is then kept in a cool place in small bottles completely filled and tightly closed. The addition of hydrochloric acid is not necessary; but, according to Dr. Hager's statement, it is subservient to the clarification of the mixture. As to the strength of the mixture, there is no standard established yet. Dr. Hager suggests that for medicinal use this pepsin solution ought to be of the strength to dissolve twelve and a half parts of its own weight of humid blood-fibrin.

MR. MCCOLLIN.—I have never seen the English article, but have heard of it. In regard to the action of alcohol, my own conviction is that alcohol does injure the properties very much, although I think a small quantity of alcohol will not destroy the properties of pepsin. Twenty-five per cent. I have found to answer.

DR. HOFFMANN.—I think ten per cent. is the highest that can be used.

MR. MCCOLLIN.—I made one preparation of glycerin without anything else, and found it very good indeed; as good as any preparation I made, except it was quite unpleasant to take, and was excessively sweet to the taste. One preparation I examined which I did not think contained any pepsin, but was all starch, and something to give it a taste.

MR. PROCTER.—It occurs to me to ask whether Dr. Squibb and Mr. McCollin have considered whether the digestive power of pepsin is not destroyed by digesting animal matter; and if so, whether it is not objectionable to cut up the stomach in the process of extracting the pepsin?

MR. EBERT.—I can corroborate the statement of Mr. Procter. Several weeks ago I tried the experiment of making liquid pepsin. I cut up a stomach and began to macerate it with glycerin, and very soon I hadn't any stomach or anything else. The whole formed a kind of magma, and I suspect it was at the expense of my pepsin. I found I could do nothing with it, and threw it away.

MR. MCCOLLIN.—One of my experiments confirms Mr. Ebert, although at the time I didn't see where the trouble was.

DR. SQUIBB.—In the act of digestion, pepsin is itself destroyed and rendered ineffective; and the object of taking the stomach, from which the pepsin is to be made, perfectly fresh from the recently killed animal, and then subjecting it to the action of alcohol, is in part to stop the action of the pepsin, and keep it from digesting the stomach itself. It has long been known that under certain circumstances the stomach will be digested by its own juices after death. Post-mortem examination often reveals erosions of the stomach, which were not unfrequently mistaken for the effects of disease, but are now recognized to be the digestion of the stomach by its own action after death on the stomach itself, after the stomach is dead. They do not act on the stomach while life exists in the tissue. When the life principle is abstracted, the liquids previously secreted for digestion know no difference between the stomach and other digestible matter. Therefore, when a stomach is macerated in wine, it is as much to check the action of the pepsin on the stomach itself as to preserve it for future use; and the question is whether, in checking this action, the pepsin is destroyed by the alcohol in the wine.

MR. EBERT.—There is a pepsin that has an exceedingly bitter taste, put up by Houghton, and I was led to believe there was strychnine in it. I tested it, thinking I had made a discovery, but did not discover any, and to what this bitterness is due I can't tell.

MR. MEYERS.—I would like to add my testimony to what has been said. I was requested by a physician to prepare him a liquid wine of pepsin. I got the stomachs from a slaughter-house. The weight of the stomachs I had was eight pounds. I took them and divested them of the fat. There is a certain portion of fat that sometimes comes with them, and that I trimmed off with scissors, placed them on a chopping-block, chopped them up, and added them to sherry wine, to which I had added alcohol to make it stand at fifteen per cent. in the test-tubes; and the results, so far as he has given them, were very satisfactory to him. I have found, in standing on a shelf, it becomes cloudy when the weather is cloudy, and when the weather is warm and pleasant it is clear.

DR. SQUIBB.—That is due probably to the circulation of fluids by change of weather. I very often see vessels that are perfectly clear ordinarily become cloudy when the temperature changes, because of the circulation of the fluids.

MR. MEYERS.—He wanted some prepared in connection with carbolic acid. I made the mixture to represent one grain of the acid in 500. I don't know whether it had any effect; it certainly hadn't the same odor as that made entirely from sherry wine.

DR. SQUIBB.—It is probable that carbolic acid would destroy pepsin at once. According to the best authorities it is always useful in the extemporaneous preparation of these pepsin wines to add a few drops of hydrochloric acid, and that may be an important thing which I omitted before.

The Secretary read a volunteer paper by Dr. S. P. Duffield, on a case of poisoning by aconite. On motion it was referred to the Executive Committee.

MR. MCCOLLIN.—One interesting point is mentioned, namely, the similarity of odor between the fluid extract of aconite and veratrum viride. Those who have not noticed this before, will find it is very difficult to tell by the odor the difference between the two. I had occasion several months ago to investigate a mistake where fluid extract of veratrum viride had been sent by a wholesale store for valerian. Its odor first led to the inference that it was aconite.

DR. SQUIBB.—The taste, however, that is alluded to there as being similar between veratrum viride and aconite rather surprises me, as it was not known to me before. Dr. Duffield there states, that the taste is alike. I am not able to refute that, but the impression which aconite leaves on the nerves of the tongue, and this is not properly the taste, is so marked, that it is hard to be deceived in any preparation which contains it. Is that Mr. McCollin's experience?

MR. MCCOLLIN.—The taste is entirely different, particularly the after-effect of it.

MR. MAISCH read from the paper, "This continued three hours," &c. Is this the effect of aconite or veratrum viride?

DR. SQUIBB.—I never knew it, and think it requires farther confirmation before we accept it as so. The taste, or rather the tingling impression of aconite, is so very definite that it is the best test for the presence of aconite in its preparations. In connection with this paper, it may not be amiss, to mention a case which recently occurred in the neighborhood in which I live, where a physician prescribed fluid extract of cimicifuga for a child with chorea, and probably wrote it by the old name of *Actaea racemosa*. This old name when contracted to "Act. Rac." has been the cause of at least once being mistaken for "Aconiti Radicis," and for this reason should never be used. The physician took care to tell the parent of the child not to get it at any ordinary corner store, but to go to some respectable establishment. He asked if some store on a prominent street would answer. "Yes," was the physician's reply, "any of those will be sure to be right." The prescription was put up, and I think half a teaspoonful was given to the child. It

happened to be given on a full stomach, after a hearty Fourth of July dinner, and the child was soon taken with retching and vomiting. The physician was sent for, and the suggestion was made at once that the medicine might be wrong. The physician tasted the medicine and said it was right. He was not particular in tasting it, but feeling sure it was cimicifuga from the store from whence it came, he kept tasting it until, as he thinks, he may have taken a teaspoonful or more. He soon after was taken with grave symptoms of poisoning, and in short, it took a couple of persons twelve hours, as he states, to keep him alive. He had an impression that if he was left alone and not kept moving the respiratory muscles would cease to act, and he would die; he urged the persons to keep him moving and keep him rubbed, and he got over it, though not so easily as the child. The next day he came to me with the bottle and asked me what the contents were. I smelt it and tasted it, and told him the physical properties of a certain class of fluid extracts were so near alike, I could not judge or guess what the contents were. The physician being a stranger to me, I, after a few moments conversation, invited him to go down stairs to my private room, and by the time we reached the room the tingling impression of aconite was very perceptible, and I told him that the liquid contained aconite. The pharmacist who put it up, when referred to, doubted the presence of aconite, and sustained his doubt by plausible but insufficient reasoning, showing that if a mistake had occurred, it was not his, but a mistake of the party from whom he purchased the preparation. The final result of the investigation showed, a probability at least, that in the laboratory of the maker of the fluid extract, a portion of fluid extract of aconite had been poured into a portion of fluid extract of cimicifuga. I have known of a somewhat similar mistake, where an article purchased for taraxacum proved to be belladonna, so that the labels of these substances are not always to be relied upon.

MR. PROCTER.—The question just now is in reference to the taste of veratrum viride and aconite. I believe that veratria does not exist in veratrum viride according to the most approved authorities. Is it not a question between the fluid extract of aconite and fluid extract of veratrum viride?

DR. SQUIBB.—It lies between aconite and veratrum viride.

MR. REMINGTON.—I understand from the case that Dr. Squibb relates, that the druggist read the prescription correctly.

DR. SQUIBB.—Yes, sir. In one instance; but in the older case of "Actaea Racemosa" it was read "Aconiti Radicis."

MR. MAISCH.—Did that shop-bottle contain only fluid extract of cimicifuga, or did it contain also aconite?

DR. SQUIBB.—It contained the mixture, whatever that was; but both shop-bottle and the packing-bottle from which it had been filled was labelled "Fluid Extract of Cimicifuga."

MR. MEYERS.—I once knew of a case where aconite root was sold for black cohosh. I received some black cohosh, and on examination found it to contain aconite. My explanation of it was that the bins containing the

two roots were adjacent, and the party who gave the order for it to be put up gave it correctly, but the person putting it up confounded the bins, and put it up without any regard to the difference between the two roots.

On motion, the Association adjourned to half-past three o'clock P.M.

Third Session.—Wednesday Afternoon.

Pursuant to adjournment, the Association met at half-past three o'clock, President Stabler in the chair.

The minutes of the second session were read by the Secretary, and on motion approved.

Mr. James T. Shinn, before reading his paper on "Liquid Preparations of Guaiacum," said :

MR. SHINN.—The results of my investigation are scarcely worthy of going on record. I wrote out a few remarks on the subject, however. The main difficulty with the syrup is, it does not contain a great deal of guaiac, but by administering more frequently, the same result is obtained and enough guaiac given.

The paper of Mr. Shinn was referred to the Executive Committee.

Query 10, on the Proper Strength of Acetic Acid in Acetic Extract of Colchicum, was, on motion, continued to Mr. E. C. Jones for another year, he having been prevented by sickness from bestowing the proper time to the subject.

Professor William Procter read an essay on the Morphiometrical Assay of Opium, which was referred for publication.

DR. SQUIBB.—I would like to say in regard to the last paper that one of the great difficulties in opium assays for practical use is the exhaustion of the opium. That has been arrived at, as undoubtedly Mr. Procter has seen, by a modification of Guillermond's process, by taking three times the quantity of opium and solvent required, and then taking off from the solution which is made one-third for the assay, and not attempting to exhaust the opium. This very much shortens the process, but in my experience does not attain uniform results. Saint Planca's process is said to be very accurate when precisely the same management is adopted every time. When different in management it gives different results. This leads to suspicions of the accuracy of the method. I never believed that the one-third off, calculated by weight, did really contain one-third of the morphia in the

opium subjected to the process. One point is to know how far it is necessary to treat the opium to exhaust it practically. We none of us aim at absolute accuracy; and I consider that an opium assay that is made within one per cent. is close enough. If we can educate pharmacists to tell the difference between opium within one per cent. of morphia, and if that can be done simply, it is a great move for Pharmacy. Many of us know the best grades of opium are not to be distinguished from the poorer grades by inspection of its physical properties. I was called upon to assay some seventeen cases of opium; and in sampling them selected the cases that looked the richest, upon an experience of some eighteen years. The assay proved that I was wrong in every instance but one, and that was accidental. We cannot tell anything about opium by its appearance, nor make a satisfactory assay in the lump. That is to say, almost every lump will vary from its neighbor in morphia value. The only safe rule is to powder the opium, a whole case at a time; and this drug is an exception to the rule of not buying important medicinal agents in powder. But then the pharmacist who buys it in powder should always assay it himself. When an entire case is sent to the drug mill and powdered, a fair average is obtained, and in no other way. Opium which has been dried and powdered is much easier to exhaust, and the solution is much easier to assay than if taken in the undried condition; and hence, the buying opium in powder facilitates the assay. Then the opium should be taken in larger quantity than the one hundred grains, which is commonly recommended. The modification given by Mr. Procter is a very good one; probably as good as any, and more applied to general pharmacy than any that I know of, if we are careful not to pour off the mother liquor until the crystallization is complete, for I have seen instances when it took days to complete it. If you crystallize in a capsule, set it in water, and cover it so as to produce a water-joint. It can then be allowed to remain twenty-four or thirty-six hours, by which time the precipitation is usually, but not always, complete. The crystallization is slow under some circumstances, and rapid under others, and the cause of this has not been determined. Alcohol of about seventy-one per cent., the strength fixed on by Guterman and advised by Saint Plancaet, is the strength of the solution from which to precipitate this crystallized matter. It seems to hold the coloring matter better in solution, and to allow the crystallization to take place better. When the assay is set to crystallize in a capsule, the crystals are deposited in a crust, from which the mother liquor may be safely and easily poured into another capsule, and in this condition the crystals are easily dried and weighed. The mother liquor should be allowed to stand for a day or two to ascertain whether or not the crystallization be complete. If the process of crystallization in a closed, confined space be not adopted, the evaporation from the surface of the capsule will form a crust, which is not morphia, and which materially invalidates the accuracy of this result. By this simple process and these little tricks of managing, it is in my judgment the safest and most reliable of all the short and easy processes; and it is so easy that any pharmacist of ordinary acquirements can do it the second

time he tries; and, like everything else, it becomes the more valuable the oftener it is practiced. The point with which I started was the diversity between the grades of opium as met with in the market, without any difference that is distinguishable by the handling of the opium. I have taken a case of Smyrna opium, "strictly prime," sold by that name in the market, and from such importers as Dutilh & Co., and having dried and powdered it, have assayed it for morphia, and found it to contain twelve per cent. or thereabouts. I have then taken another case of the kind called "Yerli" opium, for which I paid \$1.50 a pound, or thereabouts, more than for the first case; and have found that to yield, when treated exactly in the same way, between fourteen and fifteen per cent., a difference of two or three per cent. between the two grades of opium which could not be distinguished by the sight, and was only distinguished in the market by the price. When you calculate the value of the morphia in opium at \$18 a pound, you will find that each per cent. is worth \$1.25 to \$1.50. That is to say, the opium which is one per cent. richer is worth \$1.50 a pound more; yet here is an opium three per cent. better which can be had for \$1.50 more. These grades of opium are generally sought for by the makers of morphia, because they are the richest, but careful buyers can usually, by taking the proper time and keeping their orders ahead long enough, get this opium.

MR. COLCORD.—I should like to ask whether it would be justifiable to use powdered opium that contained three per cent. more than Smyrna opium?

DR. SQUIBB.—I should dispense the best I could get,—that which contains the most morphia undoubtedly. The other opiums are all debased from this standard, and it is probable that, or a still higher one, is the standard we originally started with. The Pharmacopoeia of the last decade gave seven per cent. of morphia as the minimum for opium that should be considered officinal. All above that would be considered officinal; and, therefore, nine and a half to ten and a half per cent. was probably the strength from which these present low grades of Smyrna opium have descended. In making some inquiries as to the meaning of the term "Yerli," which I supposed to be the name of a province where the poppy grew better, I found it to mean "near about;" so it is the opium produced near about Constantinople and Smyrna; that is, it is the opium of better civilization. For pharmaceutical uses, my opinion is that opium should not be used without assay, and that the Pharmacopoeia should give us a maximum limit, as well as a minimum limit, because corrupt practices have grown out of the present officinal definition. Parties have imported an opium-juice, which contained three times the percentage of morphia, and claimed entry for it as opium, to avoid the duty. This was not in the form of extract, but was called opium; the residuary matter, such as leaves, capsules, and other foreign matter, had been kept out. The Pharmacopoeia definition of opium as the juice of the *Papaver somniferum* is not the true definition of opium in commerce, and never was, for it always has foreign matters mixed in with the juice. These are all diluents, and make up the mass of the opium in the hard lumps.

MR. COLCORD.—I saw a person from the district where Yerli opium comes from, and he gave the same definition Dr. Squibb has given. I have been in the habit of using that, and I ask this question now with a view to determine whether one pharmacist would be justified in using that, when others in the same neighborhood are using Smyrna opium, that contains three per cent. less of morphia. The principle will apply to fluid extracts. If you make them, and make them as nice as if you were making analyses, you will get them more than ten per cent. stronger than those furnished by commerce, if you buy the average of commercial fluid extracts instead of making them according to the Pharmacopoeia.

MR. EBERT.—I should like to ask Dr. Squibb whether he would not consider an opium of ten per cent. better than one of fourteen per cent.; whether it would not be more justifiable in having a standard of ten per cent. than having one so very strong as fourteen or fourteen and a half.

DR. SQUIBB.—I think we must keep as close as we can to the original standard. If we could have opium always of a definite strength, it would not matter much what that strength should be; but if we are going to change now to the average strength of the market, and make that officinal, we shall have to do the same thing again in a few years, and go still further down. It is the same question which Mr. Colcord brings up. Every man must draw the line for quality in his drugs for himself. You can take rhubarb of a given high grade, and adulterate it with ten or fifteen per cent. of sawdust, and it will be better than the average market grades of powdered rhubarb; but that does not justify anybody in adulterating rhubarb, nor the lowering of the standard.

MR. EBERT.—Morphia is something very definite, and if I am going to dispense powdered opium that contains fourteen or fifteen per cent., as I have been doing, I am doing something which my neighbors cannot do. I cannot powder it myself, so I buy Dr. Squibb's, which contains fourteen per cent., and the question is whether I am justifiable in dispensing opium as strong as that in morphia. When different pieces of opium are obtained from the same case, my experience has been this. Previous to the war agitation, I thought opium would go up, and that I would buy a supply; so I bought four or five pounds. It was assayed, and contained 14.6 morphia, and knowing it was such a rich opium I went at once to buy some more. I got another lot, and found it to contain but six per cent. of morphia; and it came out of the same case.

Query 26, on *Abies Canadensis*, being called up, Prof. Procter said:

Mr. PROCTER.—Rather than get up and say anything, I concluded to write an excuse for not writing the paper.

He then read a paper, which was referred to the Executive Committee.

MR. CLOSE.—Black oak-bark is objectionable for tanning and very little used; the red oak and Spanish oak are used.

MR. COLCORD.—I suppose it is only Prof. Procter's excessive modesty that prevents him from asking a continuance of that query, and I will ask it for him.

DR. SQUIBB.—That is a good excuse, so we will let him off.

MR. COLCORD.—If we get such a good *excuse* as that, I think we should get something valuable for a paper. He will not bring in another excuse next year.

When Query 29, on Suppositories, was called for, Mr. Charles Eberle said :

MR. EBERLE.—The use of that query has almost passed away. Two years have elapsed since I accepted that query, and since that time druggists and physicians have become so well informed on the subject of suppositories, that I can hardly advance anything new. At that time when they were being introduced, and so many were in the market that were not answering the purposes of their introduction, an answer to the query would have served a very useful purpose. I have, however, collected sufficient data to warrant my offering a short paper that I will present to-morrow.

DR. SQUIBB.—The education in the use of suppositories, and the making of them, which Mr. Eberle speaks of, must be confined a good deal to his own neighborhood, for in the neighborhood where I live we are very much in the dark about them. The practice has not attained a good basis with us. I speak for myself, because I have had to take it up because others in my neighborhood would not do so; and the questions then brought up are still open. Practically, as to the admissibility of more solid ingredients, as wax and paraffine with cacao-butter, or other solid fats; and whether in melting the mixtures of any fatty matter with wax, &c., at the temperature of the human body, the wax was left as a solid irritant matter, or not, were points which he was to investigate. The question was whether when wax was melted with fats, an alloy was made which melted at a mean temperature between the two, or as others urged, in vaginal or urethral suppositories, where wax was used to give consistency, although the fatty matter melted, and deposited a portion of the medicinal ingredient, the wax remained there as an irritating, foreign substance. These are questions which I think it is very desirable to settle.

MR. EBERLE.—When some other matter is connected with cacao-butter, I do not find, unless there is so large a proportion that, by the heat of the body, the body of the suppository is not disintegrated, that it is at all objectionable to add any of these mixtures; but where so large a proportion is used as was formerly done, they remain in the vagina or urethra without being sensibly changed, and have to be removed or are ejected. The idea that was advanced, that the medicinal ingredients could be separated, and this wax

remain, is incorrect. The mixture, if it melts at all, passes to a fluid state without any separation. The idea that Mr. Maisch advanced on that occasion is the proper one. The wax is not separated, but forms a mass and melts as anything else, as he stated.

MR. MAISCH.—If I ever did advance that, it is time that I should change my idea. I think the ingredients *will* separate.

DR. SQUIBB.—I believe that such is the case. I happen to have some suppositories at home which have been made for four or five years, I don't remember how long, and were made part wax; and some few rough experiments made with them seemed to indicate that the cacao-butter *will* melt out of them much quicker and leave the wax behind.

MR. EBERLE.—That is only when it is carried to an extreme point, and a very large proportion of wax used.

DR. SQUIBB.—The proportion used was the proportion recommended a few years ago.

MR. EBERLE.—The largest I ever knew was five grains in forty.

MR. EBERT.—Within a few days I thought I knew how to make suppositories, but in Washington, I called on one of our profession, a member of this Association, and while conversing with him on the items of the profession, he said to me, "I am astonished that you have so much difficulty about suppositories. I can show you how to make them in a few minutes. I am making them simply using nothing but cacao-butter." He went through the whole process, which is a very simple one, and I, on the spur of the moment, saw it was so admirable for a query, I made a query of it, which he has accepted, promising to answer it. I am sorry that I cannot divulge the secret, as I would spoil his query. He uses nothing but cacao-butter, and it is nothing but mechanical manipulation with the fingers.

MR. EBERLE.—That was my argument two years ago, that nothing else should be used, and it was not necessary to use anything else. I never use anything else while preparing large numbers of them. I had supposed this use of suppositories was quite universal, and am surprised to hear that in New York they are not educated to them. In Philadelphia they are made in large quantities and are dispensed to the retailers by the wholesalers. I will have a paper here to-morrow defining the particular points I desire to call attention to. If there are those who desire to be educated and wish to be more thoroughly informed, I have no doubt this friend of Mr. Ebert's has a much better method than I have.

DR. SQUIBB.—One point made was, that there is a great variety in cacao-butter. The cacao-butter which is made is all adulterated. I don't know that I have ever seen a specimen which, if you traced it to the manufacturer, he could not be made to admit there was something in it besides cacao-butter. These very substances are irritant substances. If you could get it pure, no doubt that it would be as good for suppositories as the mixtures we meet with, but the want of uniformity in the cacao-butter is the trouble; and therefore I suggested whether good mutton-suet would not be better.

than cacao-butter. The point is to get a substance which is the hardest possible at ordinary temperatures, but which melts at the animal temperature. It must melt at the animal temperature, and must be hard in the hottest summer weather, or else it is not fit for suppositories, and to get that point appears to me to be the point for suppositories. In making them the past summer, we have repeatedly had them brought back in a melted condition, the box which contained them having in it a melted mass of cacao-butter; the suppositories having melted while in an ordinary sitting-room, or while being carried home in the hand of the messenger. That is the great trouble that we meet with. These were made of cacao-butter, the purest that we can get; what is supposed by the Boston chocolate-makers to be, and what they sell as the purest.

MR. PROCTER.—I have never known commercial cacao-butter, the purest, to lose its shape in the hottest weather. We make a great many suppositories, and some kinds in considerable quantities to keep. The physicians prescribe them frequently, so that we have to make a number. We never use anything but the cacao-butter and the medicinal substances. The point seems to be to give the suppository time enough to crystallize, as it were, and get its hardness. I think if the cakes of cacao-butter themselves will stand all kinds of weather without damage, the small pieces ought to if they are only prepared carefully.

DR. SQUIRE.—Sometimes you have to put in medicaments in solution. The practice at my place is to have the moulds chilled thoroughly by dipping them in broken ice. Then, run the mixture in when it is just about congealing. Then, put them back in the ice and leave them until the suppository is hard enough to be handled with moderate facility. Then put them in the boxes with their bases down and give them to the person in waiting. The prescription is left and called for in a few hours and they have to be made within that time. Our experience has been repeatedly unfavorable during this summer, but it has always been where some medicaments had to be mixed with the cacao-butter.

MR. PROCTER.—There may be some few instances of substances that act on the fat as camphor will, but if it is thoroughly chilled and comes out of the mould free, and you retain them half an hour, my experience is, it will retain its hardness. We frequently have to dispense them immediately, and in such instances it does not take over half an hour from the commencement of the process until they are finished. If we keep them over half an hour the people become impatient. We always put on a loop, and tell them to carry the box by the loop, and not carry it in the hand.

MR. EBEBLE.—My experience is, that the cacao-butter with the medicament resolves itself into a gum, which is just as readily handled. The suppositories must be hard enough to drop out of the mould when dispensed. We use the mould introduced by Mr. Bullock; a series of moulds on two plates coming together, as in an ordinary bullet-mould. We always have the moulds in contact with ice, and thoroughly chilled before the mass is

poured in, and allowing them to remain not over ten or fifteen minutes, they will drop out, and by the time they are carried home they will be hard enough to be handled with impunity, with ordinary care. I generally insist that they shall put them into a refrigerator. There is never any difficulty, and the advantage consists in their always melting at the temperature of the body. In all these mixtures I have frequently found that the druggist, in endeavoring to give satisfaction to the patient and physician, has added enough of the foreign ingredient to require more than the animal heat of the body to melt the ingredients. When a little spermaceti is added there is no reasonable objection to it, and no advantage that I can see, while a careless clerk may add enough to increase the degree of heat required to melt them beyond that of the heat of the body. In the matter of soft extracts I do not see that the adding of these other substances is of any benefit, because a little rice-flour rubbed up with the soft extract will put it into a proper condition for mixing with the cacao-butter. It would be deposited, of course, and might to some extent prove irritating, but so slightly as not to be objectionable. The addition of wax or spermaceti would not assist in overcoming the difficulty of incorporating liquid substances, or semi-solid substances.

MR. MAISCH.—I doubted, when Mr. Eberle was making his statement, that I ever said what he represented me as saying. Fortunately, I have here a copy of the Proceedings for 1868, in which I find that there was nothing said about wax, but about fats: "When fats are fused together, they cannot be separated by their fusing-points. The fact is, when two fats are mixed together the fusing-point of the mixture is not a mean between the two, but it is entirely different. Mixtures of fats may be obtained having the fusing-point lower than either of the ingredients."

Mr. B. F. Stacey read a paper in answer to Query 20, on the Honey Trade, which was referred for publication.

The Committee on the Constitution and By-laws brought forward the amendments, and the whole was read by the Secretary, as follows:

CONSTITUTION AND BY-LAWS.

PROPOSED BY THE BUSINESS COMMITTEE.

Amended and reported to the 18th Annual Meeting by a Committee appointed Sept. 8th, 1869, and consisting of

**SAMUEL M. COLCORD, WILLIAM PROCTER, JR., EZEKIEL H. SARGENT,
CHARLES A. TUFTS, AND JOHN M. MAISCH.**

CONSTITUTION.

ARTICLE I. This Association shall be called the "American Pharmaceutical Association." Its aim shall be to unite the educated and reputable Pharmacutists and Druggists of the United States in the following objects:

1. To improve and regulate the drug market, by preventing the importation of inferior, adulterated, or deteriorated drugs, and by detecting and exposing home adulteration.
2. To encourage proper relations between Druggists, Pharmacutists, Physicians, and the people at large, which shall promote the public welfare, and tend to mutual strength and advantage.
3. To improve the science and the art of Pharmacy by diffusing scientific knowledge among Apothecaries and Druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.
4. To regulate the system of apprenticeship and employment, so as to prevent, as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing, and selling medicines.
5. To suppress empiricism as much as possible, and to restrict the dispensing and sale of medicines to regularly educated Druggists and Apothecaries.
6. To uphold standards of authority in the Education, Theory, and Practice of Pharmacy.
7. To create and maintain a standard of professional honesty equal to the amount of our professional knowledge, with a view to the highest good and greatest protection to the public.

ARTICLE II. This Association shall consist of active, life, and honorary members, and shall hold its meetings annually.

ARTICLE III. The officers of the Association shall be a President, three Vice-Presidents, a Permanent Secretary, a Local Secretary, and a Treasurer, all of whom, with the exception of the Permanent Secretary, shall be elected annually, and shall hold office until an election of successors.

ARTICLE IV. All moneys received from life membership, together with such funds as may be bequeathed, or otherwise donated to the Association,

shall be invested by the Treasurer in United States Government or State securities, the annual interest of which only shall be used by the Association for its current expenses.

ARTICLE V. Every proposition to alter or amend this Constitution shall be submitted in writing, and may be balloted for at the next Annual Meeting, when, upon receiving the votes of three-fourths of the members present, it shall become a part of this Constitution.

B Y - L A W S .

CHAPTER I.

Of the President and Vice-Presidents.

ARTICLE I. The President shall preside at all meetings of the Association; in his absence or inability, one of the Vice-Presidents, or in the absence of all, a President pro tempore shall perform the duties of President.

ARTICLE II. In the absence of the Permanent Secretary, the President shall appoint a Recording Secretary pro tempore.

ARTICLE III. In meetings the President shall take the chair at the proper time; announce all business; receive all proper motions, resolutions, reports, and communications, and order the vote upon all proper questions at the proper time.

ARTICLE IV. In all ballottings, and on questions upon which the yeas and nays are taken, the President is required to vote, but his name should be called last; in other cases he shall not vote, unless the members be equally divided, or unless his vote, if given to the minority, will make the decision equal, and in case of such equal division the motion is lost.

ARTICLE V. He shall enforce order and decorum; it is his duty to hear all that is spoken in debate, and in case of personality or impropriety he shall promptly call the speaker to order. He shall decide all questions of order, subject to the right of appeal, unless in cases where he prefers to submit the matter to the meeting; decide promptly who is to speak when two or more members rise at the same moment; and be careful to see that business is brought forward in proper order.

ARTICLE VI. He shall have the right to call a member to the chair, in order that he may take the floor, in debate. He shall see that the Constitution and By-Laws are properly enforced.

ARTICLE VII. He shall appoint all committees, unless provided for in the By-Laws, or otherwise directed by the Association.

ARTICLE VIII. He shall sign the certificates of membership, and countersign all orders on the Treasurer. He shall obey the instructions of the Association, and authenticate by his signature, when necessary, its proceedings.

ARTICLE IX. He shall present at each annual meeting a report of the

operations of the Association during the year, with such information pertaining to its condition and prospects, and the object it has in view, together with such suggestions for its future management, as may seem to him proper.

CHAPTER II.

Of the Permanent Secretary.

ARTICLE I. The Permanent Secretary shall be elected to hold office permanently, during the pleasure of the Association. He shall receive from the Treasurer an annual salary of \$500, and the amount of his expenses incident to the meeting in addition to his salary.

ARTICLE II. He shall preserve fair and correct minutes of the proceedings of the meetings, and carefully preserve, on file, all reports, essays, and papers of every description received by the Association, and shall be charged with the necessary foreign and scientific correspondence, and with editing, publishing and distributing the Proceedings of the Association, under the direction of the Executive Committee.

ARTICLE III. He shall read all papers handed him by the President for that purpose; shall call and record the yeas and nays whenever they are required to be called; shall notify the chairman of every special committee of his appointment, giving him a list of his colleagues, and stating the business upon which the committee is to act; and shall notify every member of the time and place of each annual meeting.

ARTICLE IV. He shall be, ex-officio, a member of the Executive Committee.

CHAPTER III.

Of the Local Secretary.

ARTICLE I. The Local Secretary shall be elected annually, near the close of the Annual Meeting, and shall reside at or near the place where the next Annual Meeting of the Association is to be held.

ARTICLE II. He shall assist the Permanent Secretary in his duties; shall co-operate with any local committee in making arrangements for the Annual Meeting; shall correspond with the chairman of the several committees, and with other members, in advance of the meeting, for the promotion of its objects, and shall have the custody of specimens, papers, and apparatus destined for use or exhibition at the meetings.

CHAPTER IV.

Of the Treasurer.

ARTICLE I. The Treasurer shall collect and take charge of the funds of the Association, and shall hold, sign, and issue the certificates of membership.

ARTICLE II. He shall pay no money except on the order of the Secretary, countersigned by the President and accompanied by the proper vouchers.

ARTICLE III. He shall report to the Executive Committee, previous to each Annual Meeting, the names of such members as have failed to pay their annual contributions for three years, and also the names of such as have failed to return their certificates of membership after having been officially disconnected with the Association, and having been duly notified to return them.

ARTICLE IV. He shall present a statement of his accounts at each Annual Meeting, that they may be audited ; he shall receive an annual salary of \$300 and the amount of his expenses incident to the meeting in addition to his salary.

CHAPTER V.

Of Committees.

ARTICLE I. There shall be elected annually five standing committees : An Executive Committee, a Committee on the Progress of Pharmacy, and a Committee on the Drug Market, each to consist of five members ; a Committee on Papers and Queries, and a Business Committee, each to consist of three members.

ARTICLE II. The Executive Committee, of which the Permanent Secretary shall be a member, shall have charge of the revision of the Roll, the investigation of application for membership, and the publication of the Proceedings.

ARTICLE III. They shall report at each meeting a revised roll of members, with appropriate notices of deceased members, and the names of any who, having become disconnected with the Association, refuse to return their certificates of membership as provided by the By-Laws.

ARTICLE IV. They shall furnish to each member of the Association not in arrears one copy of the annual publication of the Proceedings, which publication shall contain the correct roll of members, full minutes of the several sittings, the Report of the President and of the Committees, together with such addresses, scientific papers, discussions, notices of new processes, and preparations, as the Executive Committee may deem worthy of insertion, and shall fix the price at which the Proceedings shall be sold.

ARTICLE V. The Committee on the Progress of Pharmacy, of which the Local Secretary shall be a member, shall report annually to the Association on the improvements in Chemistry, Practical Pharmacy, and the collateral branches, and on any new works bearing on these subjects published in this country or elsewhere.

ARTICLE VI. The Committee on the Drug Market shall report annually the condition of the Drug Market, the fluctuations in the supply and demand of drugs and chemicals, the variations in quality, and the adulterations and sophistications coming under their observation or reported to them by others, with any suggestions or recommendations for the improvement or better regulation of the trade; and they shall be authorized to report upon any

adulterations and sophistications of immediate interest, through the Pharmaceutical Journals, as soon as practicable after their discovery.

ARTICLE VII. The Committee on Papers and Queries shall receive all Reports of Standing Committees, and all papers for the Association. They shall designate which of them shall be read at length, or which by title, and shall be furnished with a synopsis of each by the authors. They shall, in connection with the Business Committee, arrange the time which may be most appropriate or convenient for reading them.

ARTICLE VIII. The Committee on Papers and Queries shall report, near the close of each Annual Meeting, a proper number of questions of scientific and practical interest, the answers to which may advance the interests of Pharmacy, and shall procure the acceptance of as many such questions for investigation as may be practicable.

ARTICLE IX. Any person writing a paper for the Association must, to insure its publication in the Proceedings, refer the same with a synopsis of its contents to the Committee on Papers and Queries previous to the third session.

ARTICLE X. It shall be the duty of every Standing Committee making a report annually to the Association, in like manner to furnish a copy of the same, together with a synopsis of its contents, to the Committee on Papers and Queries before the first annual session of the Association.

ARTICLE XI. The Business Committee shall be charged with the transmission of unfinished business from one Annual Meeting to another, and with collecting, arranging, and expediting the business during the sessions of the Annual Meetings.

CHAPTER VI.

Of Membership.

ARTICLE I. Every pharmacist and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of Pharmacy, Chemistry, and Botany, who may be specially interested in Pharmacy and Materia Medica, who, after duly considering the objects of the Association and the obligations of its Constitution and By-Laws, are willing to subscribe to them, are eligible to membership.

ARTICLE II. Any person eligible to membership may make application in writing, with the indorsement of any two members of the Association in good standing, to any member of the Executive Committee, who shall report his application to the said Committee.

If after investigating his claims they shall approve his election, they shall, at the earliest time practicable, report his name to the Association, and he may be elected by two-thirds of the members present on ballot.

ARTICLE III. No person shall be a member of this Association, nor shall his name be placed upon the roll, until he shall have signed the Constitution

and paid into the Treasury the sum of *Five Dollars* as an initiation fee, and the annual contribution for the current year, with the exception of *Delegates*, as provided in Article VI of this chapter.

ARTICLE IV. Every member shall pay in advance to the Treasurer the sum of *Five Dollars* as his yearly contribution, and is liable to lose his membership by neglecting to pay said contribution for *three successive years*.

ARTICLE V. Any member who shall pay to the Treasurer the sum of *Seventy-five dollars at one time*, shall become a life member, and shall be exempt from all future annual contributions.

ARTICLE VI. All Colleges of Pharmacy or local Pharmaceutical organizations shall be entitled to *five delegates*, as their representatives in the Annual Meetings, who, *if present*, become members of the Association on signing the Constitution and paying the annual contribution for the current year, without paying the usual initiation fee.

ARTICLE VII. Members shall be entitled on the payment of *Five Dollars* to receive a certificate of membership signed by the President, one Vice-President, Permanent Secretary, and Treasurer, at the same time covenanting to return the same to the proper officer on relinquishing their connection with the Association.

ARTICLE VIII. Persons constitutionally elected to membership become permanent members, and their membership can cease only by resignation, non-payment of dues, or by expulsion, as provided in these By-Laws.

ARTICLE IX. Resignation of membership shall be made in writing to the Permanent Secretary or Treasurer, but no resignation shall be accepted from any one who is in arrears to the Treasury.

All resignations shall be acknowledged in writing by the officer who receives them, and shall be reported at the next Annual Meeting.

ARTICLE X. Any member may be expelled for improper conduct, or the violation of the Constitution, By-Laws, or Ethics adopted by the Association, but no person shall be expelled unless he shall receive for expulsion two-thirds of all the votes cast at some regular session.

ARTICLE XI. Pharmacists, chemists, and other scientific men, who may be thought worthy the distinction, may be elected honorary members. They shall not, however, be required to contribute to the funds, nor shall they be eligible to hold office, or vote at the meetings.

CHAPTER VII.

Of Meetings.

ARTICLE I. The meetings shall be held annually; provided, that in case of failure of this from any cause the duty of calling the Association together shall devolve upon the President, or one of the Vice-Presidents, with the advice and consent of the Executive Committee.

ARTICLE II. The order of business at the first session of each Annual Meeting shall be as follows:

Section 1. Promptly, at the time named in the notice issued for the meeting, the President, or in his absence one of the Vice-Presidents, or in their absence a President pro tempore, shall officiate.

Section 2. In the absence of the Permanent Secretary the President shall appoint a Recording Secretary pro tempore, who shall perform the duties of the Permanent Secretary until his arrival.

Section 3. Nineteen members shall constitute a quorum for the transaction of business.

Section 4. The President shall appoint a Committee of three persons to examine the credentials of delegates, which Committee shall attend to that duty, and report to the Association as soon as practicable, when the Secretary shall call the roll, noting the names of the delegates and members in attendance.

Section 5. The Executive Committee shall present names recommended for membership, when the President, having ascertained that a quorum of members is present, shall order an election by ballot, and appoint two tellers.

Section 6. Reports of Committees shall be presented, read by their titles, the synopsis, or in full, and laid on the table for future consideration.

Section 7. The President shall call the Roll of Colleges and Associations represented, requesting each delegation in turn to appoint one member, the persons so selected to act as a Committee to nominate officers for the ensuing year; in addition to which he shall appoint five members, who are not delegates, to act with the Committee.

Section 8. The Reports of the Executive Committee, of the Permanent Secretary, and of the Treasurer, shall be read by title or in full.

Section 9. Incidental business may be called up by the Business Committee.

Section 10. The first session shall close with the reading of the President's Annual Report, and the reference of any portions of it requiring action, to an appropriate Committee.

ARTICLE III. The order of business at the second session of each Annual Meeting shall be as follows:

Section 1. The President shall call the Association to order.

Section 2. The Secretary shall read the minutes of the preceding meeting, which may be amended if necessary, and shall then be approved.

Section 3. The Report of the Committee on Nominations shall be read; when the President shall appoint tellers, and the Officers and Committees nominated shall be balloted for.

Section 4. The officers elected shall take their respective places.

Section 5. The Executive Committee shall present names recommended for membership, when a ballot shall be ordered for their election.

Section 6. Reports of Standing Committees shall be read.

Section 7. Reports of Special Committees shall be read.

Section 8. A Committee of five shall be appointed to examine and report upon specimens exhibited.

Section 9. The second session shall close with the examination of specimens on exhibition.

ARTICLE IV. The order of business at subsequent sessions shall be determined by the Business Committee, with the consent of the Association.

CHAPTER VIII.

Of Rules of Order and Debate.

ARTICLE I. The ordinary rules of parliamentary bodies shall be enforced by the presiding officer, from whose decision, however, appeals may be taken, if required by two members, and the meeting shall thereupon decide without debate.

ARTICLE II. When a question is regularly before the meeting and under discussion, no motion shall be received but to adjourn, to lay on the table, for the previous question, to postpone to a certain day, to commit or amend, to postpone indefinitely; which several motions have precedence in the order in which they are arranged. A motion to adjourn shall be decided without debate.

ARTICLE III. No member may speak twice on the same subject, except by permission, until every member wishing to speak has spoken.

ARTICLE IV. On the call of any two members, the yeas and nays shall be ordered, when every member shall vote, unless excused by a majority of those present, and the names and manner of voting shall be entered on the minutes.

CHAPTER IX.

Miscellaneous.

ARTICLE I. In all such points of order as are not noticed in these By-Laws, the Association shall be governed by the established usages in all assemblies governed by parliamentary rules.

ARTICLE II. Every proposition to alter or amend these By-Laws shall be submitted in writing, and may be balloted for at any subsequent session, when, upon receiving the votes of three-fourths of the members present, it shall become a part of the By-Laws.

ARTICLE III. No one or more of these By-Laws shall be suspended.

Forms to be signed by persons making application for membership, and testimonials, the same as at present.

MR. COLCORD.—Dr. Squibb proposes the insertion, in Chapter VII, Article III, Section 4, of the words after "the officers shall take their respective places," "and at this time the official new year of the Association is hereby declared to begin." Dr. Squibb also proposes to strike out the words

"as much as possible," after "to suppress empiricism," in Article 1st of the Constitution. It seems to me to be a good deal for us to say that we expect or intend to suppress empiricism altogether. I wish we could suppress it entirely, but I do not believe we can. I think it ought to read as it does, that it is our purpose to suppress empiricism as much as possible.

DR. SQUIBB.—Then let us say we aim to make Pharmacy progress as much as possible, and to do all the other things that are recited in the Constitution as much as possible. Let us put it in everywhere or strike it out everywhere.

MR. COLCORD.—I think the way to get over that difficulty is to put it to vote; and I therefore move that we strike out the words "as much as possible," after "to suppress empiricism," in Article V.

DR. SQUIBB.—Mr. Colcord unintentionally misrepresents it. One of the objects of the Association, as declared in the preamble, is to suppress empiricism. It is one of the objects. It is not that we expect to suppress empiricism, and to put in the words "as much as possible," carrying the idea that we shall suppress it a little, but may not be able to suppress it a good deal, does not qualify the object, because the object is qualified before by the previous language. That is to say, that is one of the objects for which this Association comes together and is formed. One of the objects is to suppress empiricism,—not the suppression of it a little or a good deal, but the object is to suppress empiricism.

MR. COLCORD.—Then the motion I make is to strike out those words.

The motion of Mr. Colcord to strike out in Article I, Section 5, of the Constitution, the words "as much as possible," was concurred in.

MR. COLCORD.—That is all the Committee have to propose. Now, the question comes on the adoption of this draft of the proposed amendments. I would like to see the question taken on adopting it as a whole, if you have spent time enough on it. If we have got through with it, we can dispose of it in a minute.

MR. MURRAY.—Is it the financial year that Dr. Squibb means?

DR. SQUIBB.—Financial, fiscal, scientific; any way you please. There is a question before this change is adopted which Mr. Maisch suggests, whether such an adoption, or the fixing of any point as the commencement of the Association year, will embarrass the Treasurer or not. His accounts must be closed up and his books balanced before he leaves home to come to the meetings. Whether the adoption of a close of the year, or the opening of a new year, in the midst of the session will embarrass his operations or not, is a question to be considered, and is a question which rises in my mind only since Mr. Maisch suggests it. But as the Treasurer never has to pay out any money here at the Association meeting, and as all the money that

he receives must be on account of past indebtedness, or on account of future indebtedness, I cannot see how it interferes with or complexes his accounts.

MR. COLCORD.—It don't make the least difference with him.

DR. SQUIBB.—I did not see how it could.

MR. MAISCH.—His report is always handed in at the first session. Of course he could not report if it was construed that way.

MR. TAYLOR.—He can report and refuse to receive until the next meeting, or count it in the next meeting.

No action was taken on this suggestion, when the Business Committee moved that the Constitution and By-laws, as amended and reported by the Committee, be adopted. The motion was agreed to.

DR. SQUIBB.—It is understood that that does not aim at adopting that portion which has been already adopted, but only the amendments. It is not a new Constitution, but amendments to the old.

The Business Committee, in accordance with the suggestions made at the second session, offered the following:

Resolved, That this Association views with regret the neglect on the part of the chairmen of committees to furnish reports, as also the failure of members to answer queries accepted by them, and hereby expresses its disapprobation of such neglect.

The resolution was adopted without a dissenting voice.

THE SECRETARY.—There has been laid on the table of the Secretary a paper written by Mr. Caldwell, now of Philadelphia. It is addressed to the Chairman of the Committee on the Progress of Pharmacy, perhaps because he did not know how to get it before the Association.

MR. PROCTER.—He is a native of Philadelphia, and graduated under the care of Thomas S. Wiegand. He became blind, and continued so a short time, and laid by a year or two; but his sight was restored, and he afterwards studied and graduated.

The Secretary read Mr. Caldwell's paper, which was referred to the Executive Committee, with discretionary power.

On motion of the Business Committee, the Association now adjourned till to-morrow morning at ten o'clock.

Fourth Session.—Thursday Morning, September 15th.

President Stabler called the meeting to order at 11 o'clock. The Secretary read the minutes of the third session, which were approved.

Mr. Charles L. Eberle read a paper on Suppositories, in answer to Query 29, which was accepted and referred to the Executive Committee.

The Secretary read a paper on Indigenous Drugs, written by Mr. C. L. Diehl, in answer to Query 27, which was likewise referred.

MR. MAISCH.—I have received a letter from Mr. Gordon in reference to Query 11. He states that he has been pursuing experiments for some time past, but hardly thinks them sufficiently advanced to report on; but he says: "By another meeting I am sure I could make a very satisfactory report, if the Association intend to continue it."

The Query was, on motion, continued to Mr. W. J. M. Gordon for another year.

MR. TAYLOR.—It is very desirable that the Association should appropriate about \$50 to the Committee on the Progress of Pharmacy for next year, or a sum not to exceed \$75, to purchase European journals, which are necessary to make up the report of that Committee.

MR. COLCORD.—I will state that the Committee to whom was referred the President's Address will report a resolution authorizing the chairman of that Committee to draw on the Treasurer for that purpose. It will come up in regular order, and save time.

Dr. W. H. Pile read a volunteer paper on Beaumé's Hydrometers, and illustrated the subject by diagrams and by experiments. The paper was referred for publication.

Dr. E. R. Squibb read a paper entitled Note on Rhubarb, and exhibited two cases of that drug. The paper was, on motion, referred to the Executive Committee.

DR. SQUIBB.—The boring of these roots very well illustrates their condition, although it does not give the color as well as breaking. The breaking of the pieces injures them more than boring, while any one who becomes expert in the appearance when bored will judge as easily by bored pieces as by fractured pieces. It exposes less of the rhubarb to the air, which is always injurious to its aromatic properties. Any one who will examine this rhubarb will see, not a sample of rhubarb, but an entire case of a grade and

quality which I regard to be unexceptionable. I know there is not a single piece in that case, nor of the sixteen or eighteen pounds bored of that one, that is objectionable for the uses of powdered rhubarb, even when admitted to the delicate stomachs of children; but a grade lower than this I maintain is not fit for this purpose. We can get such rhubarb as this without material difficulty. I have seen it in the market during the past year almost constantly; and now, any one visiting New York at any time can buy a case practically as good as that. I bring the whole case to avoid the suspicion of sampling, and to show the Association that there is such a thing as an entire case of good rhubarb even now,—as good rhubarb as any we have seen since the Russian inspectorship was abandoned. I do not think the Russian rhubarb received in old times was medicinally better than either of these cases. The price is very moderate. \$2.88 is to be regarded as the net prime cost; and this would include a profit to the large importer, although his profit would be smaller than on the lower grades, of which he would sell probably ten cases to one of this. Taking into account the labor of boring the whole chest, and selecting the few pieces that are not merchantable as selected rhubarb, the cost of this entire chest in powder may be estimated at not more than \$2.50 or \$2.65. Then, if I sell the powder at \$3.25, and the selected rhubarb at \$3.25, this is an ample profit, but not disproportionate to the care and labor bestowed upon it. There is no good reason for trying to conceal a fair, reasonable profit; and if we would show our hands more in these things, and take a little higher ground, we should have a better effect.

MR. ROBBINS.—If I were to select any article to show the value of discussion, I should select this. The fact is, to-day, we have no competition in rhubarb. We can get any price we ask for rhubarb, and it is due to the efforts of this Association (and very much to Dr. Squibb) and the discussions that have been published. This Association is no small affair; its influence is widely extended. These rhubarbs I have looked at rather superficially, but find them very good. I should think it had been selected abroad before it was sent here. I think this rhubarb runs a little better than any we have been able to get out. We have lots of rhubarb offered to us, and there is no use of our touching inferior rhubarb. Our trouble is to get it good enough, and this is very much due to the discussions here. I will give you some facts about this matter. We buy the very best rhubarb we can; we are obliged to buy the very best. For our retail trade, we always sell selected root. There are fifteen samples of powdered rhubarb up stairs, and I may as well tell the whole story about that. Our Mr. John McKesson, Jr., who was put at the head of the Committee on the Drug Market this year, suggested to present the Association with a complete list of roots; but they are very numerous, and some are rare. We have now a lot on the way which have not reached us, and at the last moment we sent you gums. Turkey rhubarb is not to be had, but the orders keep coming in, and buyers must have it. I will tell you what we do about that. What we call the "Dutch-trimmed-imitation-Turkey" rhubarb,—the Austrian rhubarb,—is steadily

improving in quality. I do not know why it is, but we get a good deal of Austrian rhubarb that will come very near to the old-fashioned Turkey rhubarb. I always recommend China rhubarb to everybody, and we sell it wherever we can; but there is a class that will have Turkey rhubarb, and we always sell them (but we sell it for what it is) selected Austrian rhubarb. We get some of it very handsome indeed. That is the state of our trade to-day. Competition in rhubarb is out of the question. We get now for our best selected \$8.50. We have a machine that cuts the rhubarb by steam into small, nice pieces, and we are very careful in powdering. If a piece is a little dark in the centre, we reject it; the rejected is ground up and sold to the jobbing trade, and the retailer gets the best of it. We have much to hope from this Association. The legislation of the country is all against us, and, I believe, against the interest of the whole trade. All the laws I have been able to look into in relation to the business thus far, work about as much harm as good. We have been more benefited by this Association than all other means, and I wish the drug business was all rhubarb to-day.

MR. MAISCH.—An interesting fact was stated, that part of our Turkey rhubarb nowadays is grown in Austria. The cultivation of rhubarb in Austria has been carried on for a number of years past, and at one time Austrian rhubarb was allowed to be used in certain cases by the Austrian Pharmacopœia. That, however, has been discontinued, and they do not use the rhubarb grown there except in veterinary practice and for poor people. The apothecaries are not allowed to use it, unless it is specially ordered, but it seems their surplus rhubarb is sent over here, and the best of it sold as Turkey rhubarb.

MR. ROBBINS.—The sale of so-called Turkey rhubarb is growing less every year, and we are all the while persuading people into getting China rhubarb; but it is very hard to remove old prejudices. A great many people want the same old Turkey rhubarb that was sold for years by our best druggists; and if they can help it, they will not have anything but Turkey rhubarb.

MR. THOMSEN.—In your investigations of the subject of rhubarb, have you discovered that it makes any difference in which section of China it is grown? The works on *materia medica* represent that Turkey or Russian rhubarb, which formerly came into the market from Moscow, was brought from the northeast of a range of mountains (the name of which I do not recollect at present) by caravans to Siberia, and found its way into market in that way. The other rhubarb which we receive from Canton and the ports in China is generally, when it is brought into this country and the English markets, different in appearance, particularly in the fracture. It appears to me, unless some recent discoveries have been made as to the comparative value of each of them, that the value would depend upon the amount of oxalate of lime which is in the rhubarb. I have, in my experience, never had any difficulty in getting good rhubarb at any time, if I was willing to pay the price for it. I imported a case of rhubarb from London, selected by David Taylor & Sons, and it cost me five dollars (\$5) in gold. It was a rhubarb in appearance entirely different from that on ex-

hibition; it had a very rough appearance, but the fracture was beautiful, of a rich pink color. I never have been able since to get any like it, except a case from Dix & Morris, New York, which had lain in their place six months; and it turned out, as Dr. Squibb remarked, that it lay there and nobody wanted it. I happened to see it, and it was the same kind as I had purchased before. Dr. Squibb's cost him less than mine cost me. In regard to rhubarb, I do not think, so far as my experience and observation go, that there ever has been any difficulty in the London market in getting good rhubarb, if you are willing to pay the price for it. I simply ask this question in regard to rhubarb to ascertain whether this which we now get from China has the same medicinal value, or whether there is any difference between that and what we formerly got by way of Russia.

MR. ROBBINS.—The old test for rhubarb was oxalate of lime, and to-day in the selection of Austrian rhubarb we reject every piece, that is, for the near trade, that does not manifest some oxalate of lime. That is still required by the trade. Years ago we should not have received this rhubarb of Dr. Squibb's as first-class rhubarb, because we regarded a certain fracture, certain lines, and certain appearances, certain tests of the presence of oxalate of lime, in more or less considerable quantities, as necessary. We also thought the solid heavy rhubarb, which broke with a sort of milled fracture, was the true rhubarb to buy. We used to get beautiful specimens of that; but we do not get any such rhubarb as we used to get. Dr. Squibb has considerably modified the trade by his reports. I understand him to claim that the oxalate of lime is the result of age. We know very little about the source of rhubarb, even Turkey rhubarb. The belief is that it comes from the great plains of Tartary, but we have not been able to trace it beyond a certain town, Kiachta. All we know is that the rhubarb we receive to-day, although it is pronounced good by the pharmacist, is different from what it used to be. We would not have called this kind first-class fifteen years ago; we should have said it was a fair rhubarb. We then used to get beautiful solid pieces that, when broken, were very finely lined, and of a very fine color; when you put your knife to it the edge would go right off from it.

MR. THOMSEN.—Have any recent discoveries been published in regard to the character of the rhubarb as we now receive it?

MR. ROBBINS.—It certainly comes from a different source. I have thought sometimes the appearance was due to the fact that it had not the age. The very fine pieces we used to get were old rhubarbs; and I have been inclined to think these here are new roots. This fact that it dries out in weight shows it; but formerly we could keep it for years without losing weight.

MR. THOMSEN.—I think I recollect that there was a commission sent to China and Russia to see if they could prove the source of the rhubarb, and cultivate it in some other country besides China; and they did succeed in getting some from the lower edge of these mountains on the north of China; but when they brought these plants to Europe, to France, and to England, although they selected the isometrical line as far as possible, the rhubarb that was produced was not the same; it did not present the same appear-

ance. The question then presented was, whether it was the climate, or whether the commissions had been deceived, and these rhubarbs that now come into the market were found to be identical in quality with the old Russian rhubarb.

DR. SQUIBB.—We do not know much about it.

MR. MAISCH.—We do not know anything about it. For the last hundred and fifty years the Russian Government has endeavored to find out the sources of rhubarb received by way of Kiachta. It is not known where the former Russian rhubarb was grown. We know it was brought by caravans to Kiachta, and that is all. The Russian Government at various times obtained plants from the merchants there, and every one of these merchants said these plants, or the seeds, were the same from which the rhubarb was obtained, and they invariably turned out to yield a different root, not only in their appearance but entirely different in structure. Subsequent investigation throws no further light on the subject. The root grown in Austria is *Rheum palmatum*; and the appearance at first sight, at a distance, is very handsome. It presents a nice mottled appearance. The Russian rhubarb that we used to get here fifteen or twenty years ago, exhibited a bright, red color, mottled with white. But even on a superficial examination the difference between it and the former is readily seen. Whether the different varieties we meet with in the market are obtained from one and the same plant, or from different plants, has not been finally settled. While some pharmacologists are inclined to the belief that the former Russian and China rhubarb came from the same plant, and are mere varieties, Schlagintweit, who has travelled through that country, and who states that it is extremely difficult to obtain information, the inhabitants being very jealous of giving it, insists that they are not.

DR. SQUIBB.—One of the principal difficulties in the way, as well as the obstruction of the old source of Russian rhubarb, has been a more rapid increase in the demand than in the supply. This always will follow when a drug is produced, as this has been, for many years by uncultivated and uncivilized people, who do not answer promptly to the demand of the market. As the science of medicine and its uses progressed, they were not up to supplying it so rapidly as it was required. It is a root of slow growth, succulent and mucilaginous when young, and comparatively inert, maturing slowly to a maximum of medicinal efficacy, and then again becoming comparatively inert from an excessive deposit of insoluble oxalate of lime as it grows old.

Dr. E. R. Squibb read a paper on Fluid Extracts and their Menstrua, which was referred for publication.*

* The editor regrets that a considerable portion of the discussion had to be omitted, because the manuscript, as far as it related to Dr. Squibb's remarks, was so confused as to be beyond correction or modification, and could not be rewritten by him for want of time. The remarks of the other speakers would not be intelligible unless accompanied by the former, and are, therefore, likewise omitted.

MR. SARGENT.—I wish to inquire of Dr. Squibb whether, in his judgment, he believes the process of repercolation to be applicable to the wants of the retail apothecary; whether it is a process that can be conducted satisfactorily in the small quantities required by the retail trade; and whether, further, the great concentration of medicines does not injure the preparation, that is, without the use of extra care.

DR. SQUIBB.—In answer to the first question, if we take the practice of pharmacy as it is conducted by the twelve thousand druggists of this country, I do not consider it applicable to their uses. It requires too much knowledge, although not as much skill as a successful single percolation does, because you get rid of much of the care and precision necessary in the packing, because the percolation of the first portion is carried to practical exhaustion independent, to a certain extent, of the quantity of menstruum used, and the results are measurably controlled by the weighing, instead of being left to chance and skill. Hence, in these points, the unskilful operator has at least an equal chance of representing the drug. But if the question be restricted to the eight hundred pharmacists represented in this Association, I think it is entirely adapted to them. With any moderate knowledge of pharmacy and of physics it is not difficult to acquire the skill necessary for repercolation. Nothing is worth having that does not involve labor, and the labor is the true measure of the values, whether it be the value of knowledge, or the value of process. The man who cannot carry on repercolation in a way to obtain fair results is not a pharmacist. The making of the fluid extract of wild cherry bark by the present officinal formula, to my judgment, is a far more difficult process than repercolation. So with the fluid extracts of cimicifuga, ipecacuanha, and others. That is, the amount of knowledge and skill necessary to these processes will be quite sufficient for repercolation, and the latter will give with this amount of skill far better results. In regard to the effect of great concentration injuring the medicinal properties of drugs in general, I believe that it does not, but rather improves them by disengaging them of useless inert matters. This, however, depends much upon the proper selection of the menstrua or solvents used for the concentration. But with the present amount of knowledge and skill in pharmacy, and with our expectations for the future, the greater the concentration the better, and every step in a contrary direction is retrograde. Better hold fast to what has been won in this direction, and use this as a basis from which to make further advancement. Fluid extract of cinchona, for instance, is one of the half-strength extracts, but the medicinal properties can be well held in a permanent solution equal to two grains in each minim; while in almost every one of these percolations a portion of extract is obtained which is very much stronger than one minim to a grain. Taking the dealers in medicines throughout this country, it is probably safe to say that less than five per cent. of them make their own fluid extracts, and it is doubtful whether this proportion could be materially increased by reducing the processes to the level of the general knowledge and skill possessed by the larger class. If not, it would but still farther remove the landmarks

whereby the large manufacturer is held in check, and still further increase the ruinous competition in cheap (and therefore cheaply made) preparations. He who deserves the name of pharmacist should make his own fluid extracts, and as this is a maxim which I have always upheld, I hope I would not present or advocate a method which was impracticable.

MR. SARGENT.—The remarks of Dr. Squibb give the key to the efforts made in Chicago to secure the reduction of the strength. We deemed it desirable that the strength should be reduced, that apothecaries might prepare their own fluid extracts. And I fully believe that repercolation, or some change in the strength, or some other process, must be made in order to bring about this change, and to introduce an improvement which is very necessary. And I think the experiments reported by Dr. Squibb this morning prove this conclusively, when I remember that the lowest average that could be placed by his experiments upon percolates would average six pints to each finished pint of extract.

DR. SQUIBB.—If you will inspect these tables you will find that two pints from each officinal portion will not represent the drug in the strength of two minimæ, to the grain, in very many instances. I mean to say, if one officinal portion be percolated to two pints, you will not always get in these two pints of percolate eighty per cent. of the total extract of the drug.

MR. SARGENT.—But you have much less weight.

MR. TAYLOR.—We are to make a change in the Pharmacopœia which will necessarily involve a change in the strength of all fluid extracts. By the action of the Convention, held in Washington, on the revision of the Pharmacopœia, we were directed to abolish measures of capacity in the Pharmacopœia. And the resolution, I think, was passed without due consideration. But, I believe, the committee is bound by the action of that Convention. If we carry out the action of that Convention we shall have very considerable difficulty. If we abolish measures of capacity in making fluid extracts, we are entirely at sea as to how strong we shall make them. Suppose we want to make a fluid extract of rhubarb. We take sixteen Troy ounces of rhubarb. How much fluid extract shall we make from that if we are to abolish measures of capacity? We are not to make a pint of fluid extract from it. If we make a pint of fluid extract, and then take the weight of that in Troy grains, and give that as the result, we are not abolishing measures of capacity, but simply telling what would be the weight of a pint of extract. Now, the fluid extract should bear some simple, direct ratio to the drug from which it is obtained. And I take it that the fluid extract of rhubarb should represent either once, twice, or one and a half, perhaps, some other simple proportion of the drug used. For every sixteen Troy ounces of rhubarb, that make either sixteen or thirty-two Troy ounces of fluid extract, we do not know how much it will measure. The process is tentative. If we make a fluid extract of some drug, by a formula which says that we shall make two pounds of extract from a pound of drug, we get a very different measure from what the physician has, who, in prescribing, prescribes the drachm or ounce by measure; and one or the other will give very differ-

ent quantities of the crude drug. He will be entirely at sea. And unless we can get physicians to prescribe by weight, it seems to be a step in the wrong direction to make these preparations by weight. There ought to be uniformity. If we make them by weight, they should be prescribed by weight. Then a physician would know intelligently what he is prescribing. I mention this to show that we necessarily must have a different arrangement for fluid extracts. What will be determined on I cannot say. The subject has not yet been brought before the Committee.

MR. SARGENT.—Is it proposed to abolish the fluid ounces?

MR. TAYLOR.—All measures of capacity are to be abolished.

DR. SQUIBB.—It was not probably intended that the Table of Measures should be omitted, nor that any abrupt change in the physician's usage of prescribing by measure should be attempted, and therefore weights and measures must be used together in a class of preparations like fluid extracts, where the essential original idea was to make a measure which should correspond to, and be controlled by a weight. It is in this class of fluid extracts only where this difficulty exists, and here, perhaps it is more apparent than real, since so far as my earnest support of the resolution to abolish measures of capacity went, it was with no desire to render the resolution inflexible, or to place the Committee of Final Revision in any position of difficulty, nor to exclude measures of capacity in the working directions or processes of the Pharmacopœia, but only to exclude them from the formulas which stand at the head of the processes, and govern the quantities to be used. It should be remembered that the sole object of the desired improvement which was sought to be expressed by this resolution was to increase the accuracy and uniformity or precision with which the officinal substances are combined in their preparations, and then it will be plain enough that where the resolution really obstructs this design by any literal reading of it, the spirit and intention rather than the letter of it should be taken. The difficulty of applying the language of the resolution to the class of fluid extracts is not new to me; nor are the inaccuracies which result from the use of measures in these very processes by which a given measure is obtained or taken irrespective of the quality of the drug and of the knowledge and skill applied to the exhaustion; and hence, in my own practice, I have applied weights to control the measures without depending exclusively upon either, and this, with so fair a share of success, that I venture to recommend it for general adoption, in the paper just offered to the Association.

MR. TAYLOR.—I think the only interpretation which can be put on the language is the plain one. As I understand it we receive but the one instruction.

MR. SARGENT.—If this is designed to apply merely to the formula as to the parts that are to be used, then there is no difficulty.

MR. TAYLOR.—They are to be abolished from use in the Pharmacopœia.

MR. SARGENT.—This relates only to the formulas, as I understand it.

Mr. Taylor has handed me the resolution that measures of capacity be abandoned, and that quantities in all formulas be expressed both in weights and equal parts by weight. It refers to the formula and not to the dispensing.

MR. TAYLOR.—I have a resolution to offer.

The following resolutions were presented through the Business Committee, considered seriatim, and passed unanimously:

Resolved, That the sincere thanks of this Association are eminently due and are hereby tendered to the Faculty of the University of Maryland, for the free use of their hall for the purposes of the Eighteenth Annual Meeting of this body.

Resolved, That the thanks of the members of the American Pharmaceutical Association are hereby tendered to Messrs. Kendall & Co., of Baltimore, for their courtesy on the occasion of the visit to their extensive works for preserving fruit, September 15th, 1870.

Resolved, That the thanks of the members of the American Pharmaceutical Association are hereby tendered to Messrs. Maltby & Co., for the courtesy extended on the occasion of the visit to their extensive oyster establishment, September 15th, 1870.

Resolved, That the members of the American Pharmaceutical Association hereby tender their warmest thanks to Messrs. Gail & Ax, for their courteous attention and hospitality extended to them at their mammoth tobacco works, on the occasion of a visit by special invitation, September 15th, 1870.

Resolved, That the thanks of the visiting members of the American Association in attendance at the Eighteenth Meeting, are hereby tendered to the Pharmacists of Baltimore, and their friends, and especially to the Reception Committee and Local Secretary, for their endeavors to render their stay in the Monumental City pleasant and social; and that they will return to their homes with pleasant remembrances of their visit.

MR. TAYLOR.—The Committee on the Place of Meeting is ready to report.

The Committee on the Place and Time of Meeting in 1871, presented the following report:

The Committee appointed to consider the time and place for holding the next Annual Meeting, respectfully report that our next Annual Meeting take place at St. Louis, Mo., on the second Tuesday in September, 1871, at 8 o'clock, P.M.

HENRY HAVILAND, Chairman.

MR. HAVILAND.—It would be well to make a few remarks in regard to the manner in which we came to a decision to go to St. Louis. Although there was some diversity of views among the Committee, St. Louis seemed to be the favored place. There are many peculiar circumstances in regard to St. Louis, which our older members recollect, and some of the newer ones possibly. Some of our oldest and most active members reside in St. Louis. They have been anxious for many years to have the Association meet in their

city, and invitations have been extended, but from some misfortune we have never met there. At one time an epidemic prevented it; at another time the war. Some of us may recollect that in 1865, at the meeting in Boston, there was quite a large delegation from St. Louis, for the very purpose of having the Association meet, the next season, at their city. At the time the proposition was made in the Convention, to meet in Detroit, the spokesman of the St. Louis delegation happened to be absent, and the members from that city who were present were not used to public speaking, and were not prepared to urge the claims of that city. The proposition was made to meet in Detroit, and supported by a prominent member who resided there, and also by other members. It seemed to strike the meeting at that time favorably, and they decided to meet there, very much to the disappointment of the St. Louis delegation. They felt so much aggrieved about it that they did not feel as if they could extend an invitation to us again. If we go there, we must go there on our own volition. It has been the feeling of the Association for many years that we should go where we pleased, with or without an invitation.

On motion of the Business Committee the report was accepted and laid upon the table, to be taken up at the next session.

The Association then adjourned to meet again at half-past three o'clock.

Fifth Session.—Thursday Afternoon, September 15th.

The meeting was called to order by President Stabler at 3½ o'clock. The Secretary read the minutes of the fourth session, which on motion were approved.

Mr. Matthew F. Ash, on behalf of the Executive Committee, presented the names of the following applicants for membership:

Maryland.

J. H. B. Campbell, Cumberland.
Adam J. Gosman, Baltimore.
William H. Osborn, "
J. Newport Potts, "
James Addison Sheets, Baltimore.
William F. Thompson, "

Massachusetts.

S. W. Cummings, Ipswich.
Joseph Josselyn Estes, East Abing-ton.
Henry C. Holden, North Adams.

New York.

H. W. Cady, Plattsburgh.
Carlos E. Day, Brooklyn.
William Vincent, "

Ohio.

John M. Lloyd, Cincinnati.

Pennsylvania.

Isaac H. Kay, Philadelphia.
Edward H. Luckenbach, Bethlehem.

Vermont.

Albert H. Higgins, Rutland.
E. C. Lewis, "

The President appointed Messrs. Simms and Milburn, of Washington, D. C., tellers, who reported the unanimous election of the candidates.

Mr. William T. Saunders read a volunteer paper on some medicinal plants of Canada, and exhibited specimens of the preparations referred to in his essay, which was referred to the Executive Committee.

MR. SAUNDERS.—There is one point I would like to press, and that is the comparative ease with which these extracts—the solid particularly—are made, and the importance of every pharmacist making them himself. The yield from belladonna and digitalis is quite large, the extracts can be made at a comparatively low rate, and the preparations are very much better than anything that can be obtained in the market.

MR. EBERT.—The Committee on Queries have a paper of Practical Notes on the Pharmacopeia, by George S. Dickey, of San Francisco. I have selected a number of pages which I will read to you. They will give you some idea of the character of the whole paper. This paper seems to be a kind of review of the processes of the Pharmacopœia.

Mr. A. E. Ebert read extracts from the paper of Mr. G. S. Dickey.

DR. SQUIBB.—I think that paper has been prepared with too little care and too much haste to be published in its present form. The want of grammatical accuracy and the style render it objectionable for publication. The author seems to have had ideas enough, but in endeavoring to make a short paper and to get as much in as possible, he has sacrificed accuracy and clearness.

MR. SHINN.—I don't suppose it is necessary for the Executive Committee to publish every paper referred to them. I supposed papers were referred to them to determine whether they should be published.

DR. SQUIBB.—That would throw the onus on them. There seems to be some mistakes which are rather grave ones, which would have to be corrected. The author says it does not make any difference how much acid is used in Monsel's salt.* We know that to be contrary to the truth, and

* This is evidently a misapprehension on the part of Dr. Squibb, Mr. Dickey insisting on the necessity of using certain definite weights for obtaining Monsel's salt in suitable condition, but he argues that *for the use as a haemostatic, the solution might contain an excess of acid.* In justice to both gentlemen, the following passage is quoted from Mr. Dickey's paper: "As a haemostatic there is no sort of comparison between the salt and its solution. The latter is already saturated with water and mixes with blood like so much syrup. The salt, obeying the physical laws which make the piece of sugar a sponge, seizes the water from the blood, and at the same

probably it was contrary to what he knew; and to correct these errors would involve considerable labor. There are errors in his notes on opium. To be sure, we are not responsible for them; we merely print them, but I think it would give an erroneous impression of the pharmacy of San Francisco if it were printed as it is. I should be very sorry to do anything to estrange him from us by any too hasty condemnation of his work on our part, but it is too unfinished to put into the hands of the Executive Committee; and, therefore, to get the sense of the Association I move that it be returned to the author with a request that he elaborate it and put it in proper shape for publication.

The motion of Dr. Squibb was carried.

Mr. James T. Shinn, on behalf of the Committee on the President's Address, read the following report:

The Committee to whom was referred the Address of President E. H. Sargent, respectfully report that several suggestions were made by him, many of which are provided for in the amendments to the Constitution and By-laws passed at the last session; others have been selected as requiring the action of the Association, and in order to bring the subjects before the meeting, resolves have been drawn up for adoption or rejection.

First. That if the Treasurer finds he has not funds on hand to meet promptly the expenses of the publication of the Proceedings, he be authorized to borrow money for that purpose.

Second. That the Executive Committee be directed to furnish the chairman of the Committee on the Progress of Pharmacy with such journals as he may designate for the compilation of his report.

Third. That Joseph B. Remington, Albert E. Ebert, and W. T. Wenzell shall constitute a Committee on the Adulteration and Sophistication of Drugs and Chemicals for the ensuing year.

Fourth. That the Executive Committee be directed to have a General Index of the published proceedings for the last decade compiled and published in the Proceedings.

Fifth. That the President be authorized to appoint agents where needed in the different states for the collection of dues, distribution of the Proceed-

time appropriates the iron and coagulates the albumen, in obedience to chemical laws. It is of comparatively little moment how the *solution* may be constituted. It may contain any proportion of sulphuric and nitric acids to the reaching of the complete saturation of the 'persulphate'; the difference in value will be rather in proportion to its greater or less dilution. But when the solution is to be made for the preparation of the dry salt, great care is necessary," &c.

In the same paper, Mr. Dickey also corrects an error contained in his formula for the preparation of Monsel's salt in scales, as published in the *American Journal of Pharmacy*, 1860, p. 10: the item Acid. Sulph. com. f*3*ix + f*3*iiij, should have been f*3*iv + f*3*iiij.—**SECRETARY.**

ings, &c.; such agents to be designated by the Treasurer and Permanent Secretary of the Association, and a list of the agents to be published in the Proceedings.

Sixth. That a committee be appointed to take into consideration the suggestion to invite the International Congress of Pharmacists to meet in the United States in 1876, and report upon the subject in 1871.

The Permanent Secretary's report on Legislation was likewise referred to this Committee. The only subject requiring action is the appointment of a Committee to watch the action of the different states, as provided for in the following resolution:

Seventh. *Resolved*, That a Committee of five be appointed to report upon Legislative Action upon Pharmacy and the Drug Trade in the different States of the Union.

DR. SQUIBB.—I would like to ask what the Treasurer thinks of the first resolution, and the necessity of it.

MR. TUFTS.—I think it will be necessary to do so.

DR. SQUIBB.—If interest was paid on the bills for publication, would not that be sufficient?

MR. TUFTS.—I think it would. Merrihew & Sons charged interest last year. This year I think they did not, but I could not say positively, because I have not been able to confer with Mr. Wiegand, he not being present at this meeting. The year before that we paid them \$48 interest.

DR. SQUIBB.—That is equivalent to borrowing money, but a very much better way of borrowing.

MR. SHINN.—The resolution does not mention the way of borrowing.

MR. MAISCH.—We didn't borrow money; we only didn't pay at the proper time what we owed.

MR. TUFTS.—Merrihew & Sons charged us for interest, and allowed us interest on the payments, and the balance against us was about \$48, if my recollection is right.

DR. SQUIBB.—That is equitable.

MR. TUFTS.—My course has been, when I have had money enough in my hands, to get a draft and forward it to Mr. Wiegand, who paid it to the publishers, and they allowed us interest.

MR. SHINN.—This was not the suggestion of President Sargent, by any means.

MR. SARGENT.—There was no proposition in the address to borrow money outside of the Association; and for one, I would not approve of it. I should be very much opposed to it. If we have got to borrow money, this is the place to borrow it. The suggestion was that members should pay two years in advance; and if that was favorably considered, it would probably be necessary that a vote authorizing the Treasurer to receive funds in this manner should be passed,—that is all.

MR. TUFTS.—Money may come in so plentiful that the interest may be but small. I can't tell how it will be, because I can't tell how the members may pay. As soon as I return I shall endeavor to secure prompt payment of all amounts due the Association.

DR. SQUIBB.—It don't seem to me that it is worth while to attempt to avoid paying interest. It is equitable, and I think the Association cannot be unwilling to see interest charged upon bills that remain unpaid; and if that satisfies the publishers so as to remove from us the onus of an unpaid bill, I think that is the best way to provide for it. We have provided for an increase of the annual assessment; and when that comes in force, it is the judgment of the Treasurer and others that we can pay our expenses without getting in debt. I am not in favor of the passage of this resolution.

MR. SHINN.—I think by another year we shall be prosperous enough to obviate the necessity of any such thing. I think it will be safe to negative this resolution.

MR. REMINGTON.—I think we can safely promise the publishers that next year their bills will be likely to be met more promptly.

The first resolution attached to the report of the Committee on the President's Address was negatived, and the second resolution was taken up.

DR. SQUIBB.—The recommendation this morning included a definite sum. Do the Committee think proper to include a definite sum, \$50 or \$75?

MR. SHINN.—It was thought that was scarcely necessary, as we had confidence in our officers that they would not appropriate more than was necessary for the compilation of this report. Quite a number of the journals cost nothing, but the object was to give them to the chairman when he wanted them, so that he might begin to compile his report at once.

MR. MAISCH.—I think the recommendation must have had reference to the necessity for the chairman of the Committee on the Progress of Pharmacy to have journals to make up the report. It is not to be expected that the chairman should buy all the journals necessary for the purpose of making up that report. The Association gets about fourteen periodicals in exchange for the Proceedings, but those do not cover the whole ground. I have for the last eight or nine years lent my own private journals to the chairman of the Executive Committee to help in making up the report, and I think if we had a little more money in the treasury, we had perhaps better use \$50 or \$75 to get them.

MR. SHINN.—We thought the work of compiling the report was enough to warrant the chairman owning these journals and keeping them for his own use.

MR. MAISCH.—The journals in the two years would not be of any use to the chairman of the Committee, while in the hands of the Association they

might be of some future use. If the chairman of the Committee on the Progress of Pharmacy should become the owner of the journals for the year of his term of office, which commences now, or from the first of July until the next July, none of the volumes would be complete.

The second resolution was adopted, and the third one taken up.

MR. SHINN.—It is understood that Mr. Remington will be willing to serve on this Committee. He has ample facilities.

DR. SQUIBB.—I had rather see these three committees of one, each to report separately. I think there will be no great use of having one Committee of three members. The chairman will have to do all the work. He cannot communicate, with facility, with the other members, and cannot very well express their ideas, or embody their researches. I should like to see it a one-man committee, or three committees of one each, asking each member to report to the Association. The work of the Committee on the Pharmacopœia was done in that way. We agreed among ourselves that each member of the Committee should report his own work, but in that case the result was one member of the Committee reported his work, and the others did not. The manual labor and time necessary for intercommunication between the three members of a committee, is very great, and can never be performed with any great advantage either to the report or the subject. I should either like to see it a committee of which each member was to report his own work (then it might stand), or a one-man committee; if a committee of three, each member to consider himself responsible to the Association for his own work, and not be obliged to report through the chairman. It would last longer if we have one committee of one man for three years.

MR. SHINN.—If we add to this, "each to make a separate report," that would answer your purpose?

DR. SQUIBB.—Yes, sir.

MR. SHINN.—I think the advantage of three men in different parts of the country is obvious.

MR. EBERT.—When this Committee was spoken of, and Mr. Remington accepted the position, we agreed whenever we came across an adulteration to make an examination, and furnish him with a notice of the same with our results.

DR. SQUIBB.—If there is any understanding between the members of the Committee that they can work together, and will work together, I give way at once.

MR. SHINN.—It was on the understanding that this Committee would work together that it was recommended.

MR. REMINGTON.—I think for the successful working of this Committee, it would be necessary to have some communication between the members.

For instance, one member in one part of the country meets with an adulteration, and he has not the facilities for working the matter up successfully. He can then turn it over to either of the members that has facilities for investigating it. I should like to see that Committee larger. It is a wide subject, and oftentimes in different sections of the country different kinds of adulteration are practiced. Probably in my section I may come across only a few, while out West, in the neighborhood of Chicago, there may be adulterations of a different kind practiced.

DR. SQUIBB.—My object was to relieve the Committee from difficulty. As I now see they have arranged the matter themselves, the thing is foreshadowed, and they understand and have matured a plan of work, I withdraw all my objections to it, and move the question as it stands.

The third resolution was carried, and the fourth one was taken up.

DR. SQUIBB.—I would suggest whether an addition to that would not be useful; that it be compiled by the same member who compiled the last, and under the same circumstances, and that he be paid for it. It is a very laborious work, and the man who has gone over it for the previous ten years is the man who ought to go over it again.

MR. SARGENT.—I had Mr. Wiegand in my mind when I made the suggestion, and used the word "employed;" meaning that he should be paid for it. No man should be asked to do such a work without compensation.

DR. SQUIBB.—If the chairman of the Executive Committee should be designated, I think it would be more satisfactory. He is a modest man, and would not like to undertake the revision unless he be requested by the Association to do so.

MR. SHINN.—Would it not do to say that Mr. Wiegand was directed, or employed to do the work?

DR. SQUIBB.—Requested, with the understanding that he is to do it under the same circumstances that he did it before, and be paid for it.

MR. SARGENT.—Why not recommend the Secretary to employ him?

DR. SQUIBB.—Why not the President have the Index made, and let him get the chairman of the Committee to do it?

MR. MAISCH.—Ten years ago Mr. Wiegand was requested by the Association.

DR. SQUIBB.—I think if the resolution was in that form, it would be more acceptable to Mr. Wiegand.

MR. MAISCH.—Oh, certainly, and the matter of compensation can be fixed next year.

MR. SARGENT.—Leave it to the Secretary.

DR. SQUIBB.—He fixed it himself, didn't he?

MR. MAISCH.—He was presented with a complete set of the Proceedings of the Association up to that time. That was his compensation.*

MR. SARGENT.—I would leave it with Mr. Maisch, who lives in the same city, and who is a neighbor and a personal friend of his. That would be more satisfactory.

DR. SQUIBB.—I think it would be more satisfactory if the Association requested him. If we request him to do it, and when it is done pass a resolution giving him what we think he is justly entitled to, that will be the best way. I would like to see the resolution altered so that Mr. Wiegand be requested to make the Index.

MR. SHINN.—Suppose we alter the resolution to read: “Resolved, That in thankful remembrance of his former services, Mr. Thomas S. Wiegand be requested to prepare a General Index of the published Proceedings of the Association for the last decade, to be published in the volume for 1871.”

MR. SARGENT.—Is one year time enough to have him prepare it?

MR. SHINN.—It is desirable to have it in the even numbers of the year; then we know where to look for it always.

MR. MAISCH.—But the first one included 1860, and was to be published in 1861. In the next one 1870 will be included, and it should be published in 1871. To those members who desire it, it might be furnished separate, so that they can bind it separately.

The resolution was passed in the form as modified by the Committee, and the fifth resolution was brought forward for consideration.

MR. MAISCH.—I have been acting as agent for the Treasurer occasionally, and I must say I should like to have such a resolution passed. Those who have been heretofore acting for the Treasurer to facilitate his labors, have been frequently told by members of the Association that they had no business to meddle with these affairs. I think if the Association gives authority to have agents appointed, everybody will see that they have some business. Some members in other places have had a similar experience.

MR. SARGENT.—The suggestion grew out of my own experience in being insulted in this very matter while acting for the Association. I am sorry the resolution is so narrow. It does not embody the language I used, which was that an agent be made in each state, and if there is no objection I should prefer that.

MR. SHINN.—It was modified, because in some states where there are several populous cities, we might want more than one agent. I will add “that a list of the agents be published in the Proceedings.”

* Mr. T. C. Murray was correct when he stated in answer to the Secretary's remarks, that Mr. Wiegand was presented with a bound copy of Muspratt's Illustrated Cyclopaedia of Chemistry. See Proceedings, 1862, p. 40.—SECRETARY.

MR. EBERT.—I would wish to have incorporated into the resolution, that it be necessary for each agent to make a statement to the Association, or an annual statement to the Treasurer, or to the Secretary, or to some other officer.

DR. SQUIBB.—The Treasurer would take care of that.

MR. EBERT.—It is necessary that the Treasurer, if after appointing an agent, he shall find that he is not doing his duty, may appoint some one else.

DR. SQUIBB.—I should like to see the word "authorized" inserted. That might carry a little more weight with it.

MR. SHINN.—We say be *authorized* to appoint an agent; we can't put the word authorized in again.

DR. SQUIBB.—We can say be *directed* to appoint an authorized agent.

MR. HAVILAND.—It seems to me the word "authorized" is surplusage. He is appointed by the President, and *he* is authorized.

MR. SHINN.—I think it carries a little more weight when you use the word "authorized" agents.

DR. SQUIBB.—That is so.

The fifth resolution was modified so as to read, "that the President be directed to appoint authorized agents where needed in the different states," &c., and in this form it was passed.

The sixth resolution, in regard to inviting the International Pharmaceutical Congress to meet in this country, was taken up.

MR. SHINN.—Some of the Committee thought we were in rather a raw and unfeudged state to invite the pharmacists of Europe to meet over here. Very few of us can talk German and French.

MR. EBERT.—I think we would find no difficulty. These gentlemen will be able to speak English, and they would be more likely to get along than the American delegation at Paris. I must say, our experience was very sad; we had to have somebody to interpret for us, and when we made a speech it was necessary to interpret it to them.

MR. SHINN.—I was going to refer to the crude condition of Pharmacy, and the want of legislation to which they are accustomed at home. However, this only appoints a committee to consider the subject.

The resolution was adopted, and the last one appended to the Committee's report came up for consideration.

DR. SQUIBB.—I think this is rather an important subject. I should like to see a committee appointed to keep the watch. Five is better than three, because they can be more evenly distributed, so as to keep the run of the legislation that occurs, and sum up what has been done and what is proposed to be done. I think it is an important committee and will do good.

MR. EBERT.—I should think these state agents were the men to attend to that. They ought to attend to the business of their states, and if there are any laws passed in their states, they certainly will be aware of it, and ought to inform the Treasurer or Secretary. Let us make it one of their duties that they look after the interests of the Association, and if they are not live men, let us change them every year until we do get live men that will attend to it.

The resolution directing the appointment of a Committee on Legislation was carried.

Dr. Fr. Hoffmann now obtained the floor, and said :

On the occasion of the simultaneous occurrence of the annual meeting of our Association with that of the British Pharmaceutical Conference, we have exchanged fraternal greetings. It may be appropriate and opportune to extend this friendly intercourse by sending a word of felicitation across the Atlantic to one of the most successful and notable of our European sister associations.

The time-honored North German Apothecaries' Association intended to hold its annual meeting nearly simultaneously with ours, in the city of Dresden. In consequence of the European war, this meeting, however, has been postponed, as have all other similar gatherings in Germany. This meeting of 1870 was not only the occasion of the regular annual convention, but at the same time the Association was to celebrate its semi-centennial anniversary. Fifty years ago, the North German Apothecaries' Association was founded by the exertions of Dr. Rudolph Brandes, of Salzuffeln; it was called into existence in September, 1820, in Dresden, by a number of high-minded and accomplished pharmaceutists. The young but vigorous tree grew strong and stronger, branched, and brought ample fruit. During half a century, the Association has embraced most apothecaries of North Germany, and numerous names who are, and ever will be, cherished in the history of pharmacy and of science, and scarcely any pharmaceutical association can point to more beneficial results, or can record such a high range of individual and general accomplishments. The official organ of the Association, the "Archiv der Pharmacie," since 1850, has taken the lead in German pharmaceutical literature, and has been an advocate of progress in pharmacy, and the repository of the literature bearing thereon, many of its pages being adorned with the labors of the foremost pharmaceutical scholars of our time.

I do not enter into details of the interesting history of that Association, and of its share towards the noted high standard of German pharmacy. I desire, however, to state that the American Pharmaceutical Association and its aims and accomplishments have always been correctly understood and justly appreciated in Germany. There it is considered the pioneer and exponent of true pharmaceutical progress on the Western Hemisphere, and our aims to elevate our profession by striving to secure adequate legislative protection and self-government, as well as by a better education to the in-

creasing requirements and duties of our profession, find always a prompt response of true sympathy and gratification in Germany.

Therefore, in consideration of the mutual international interest in the common fields of science and practical aims, in consideration of the evident regard in which the American Pharmaceutical Association is held in Germany, I beg leave to propose to this meeting to reciprocate the expression of kind fellowship of the elder time-honored Association, and accordingly make the motion that a Committee of three be appointed to prepare an address of felicitation, embodying the kind sentiments of this Association, on the occasion of the fiftieth anniversary of the North German Apothecaries' Association, and to forward this address, in the name of the American Pharmaceutical Association, to the President of the German Apothecaries' Association, Mr. Wilhelm Dankwortt, in Magdeburg.

MR. MAISCH.—I rise for the purpose of seconding that motion. I second it with a great deal of pleasure, not merely because it is an Association of my countrymen, but because I know and could give you the facts to show that the North German Apothecaries' Association was among the first in Europe that recognized the labors performed in this Association, and it is a very significant fact, which I pointed out in my report as Secretary, that of all the exchanges we get, by far the greatest majority come from Europe, and particularly from Germany. We get from Germany not less than nine publications. I second the motion with a great deal of pleasure. The Association, I believe, is the oldest one of our profession in existence. It is now fifty years since it was formed, and I think it behoves us as one of the youngest National Associations to send our greeting to them.

The resolution offered by Dr. Hoffmann was adopted, and the President appointed Dr. Fr. Hoffmann, J. M. Maisch, and E. H. Sargent the Committee to Prepare and Forward an Address to the North German Apothecaries' Association on the Occasion of its Fiftieth Anniversary.

DR. SQUIBB.—I believe I would like to see one name changed to the present President. The President and the two members would be the best Committee.

MR. SHINN.—We want men whose names will represent the Association, and I think the President's name is the best to put on it.

DR. HOFFMANN.—The address to Prof. Ehrenberg was countersigned by the President. I think the President should always countersign such an address.

MR. MAISCH.—I think the President's name should be on the address, besides those of the members of the Committee.

DR. SQUIBB.—If that is desirable, let it stand.

The next business before the meeting was the selection of a place for holding the next annual meeting. Dr. Squibb moved

that the Nineteenth Annual Meeting be held at the place and time recommended by the Committee in the report handed in at the fourth session.

The motion having been carried unanimously, Mr. William H. Crawford, of St. Louis, was nominated Local Secretary, and elected.

Mr. Ferris Bringhurst, chairman of the Committee on Specimens, read the report of this Committee. On motion, the report was accepted, and referred for publication, and the Committee discharged.

Dr. Squibb being called upon to communicate his experience in the manufacture of Chloral, rose and said:

I will begin by saying that I know very little of chloral. If I know more than the rest of you, it is because I have seen more of it, and been a little more conversant with it, and that is all. I think none of us know enough about it to say much about it. It is a very curious substance; its natural history is one of the most singular of any chemical I have met with, and requires and deserves more study than it has had. Chloral is the ultimate product of the action of chlorine on alcohol, as its name implies, the first syllables of the two words being formed into the name; "chlor," the first syllable of chlorine, and "al," the first syllable of alcohol, making "chloral." When chlorine gas in a dry state is passed into absolute alcohol, a series of changes appear to take place, which may depend on the abstraction of hydrogen and the substitution of chlorine. The first portions of chlorine gas that pass into absolute alcohol are converted, or appear to be converted, at once into hydrochloric acid, and that hydrochloric acid is absorbed by the remainder of the alcohol, and reacts with it, producing hydrochloric ether. The second step in the reaction is to again decompose or supersaturate this hydrochloric ether with chlorine, and then hydrochloric acid escapes; and, finally, as heat is applied in the process, the hydrochloric ether escapes and a substitution appears to take place, whereby chlorine is substituted for hydrogen in the already decomposed alcohol. This is but a rude outline of the process. Chloral was discovered by Liebig in 1829 or 1830, although the paper in which it was described was not published until about 1832; therefore it is commonly stated that he discovered it in 1832, which is incorrect. Dumas was the next who investigated it, and these two observers investigated it as a table specimen product. Last year, Dr. Otto Liebreich, in his physiological investigations regarding the group of anaesthetic chemicals, reasoned back to this substance the known effects of chloroform, and tried it first upon animals, then upon patients. At first he supposed it was an anaesthetic, but afterwards modified this view, and now I believe regards it as a hypnotic, and, in some cases, an anodyne. The apparatus for making chloral consists, first, in the means of generating

chlorine; second, in the means of drying the chlorine; third, in the means of passing it into absolute alcohol without loss; and, fourth, having the absolute alcohol in such a position that it can be gradually warmed. The process requires about twenty-eight days for the current of chlorine to be passed into the absolute alcohol, and I believe the slower the current passes into the absolute alcohol the better; that is to say, the longer the time which is taken to produce the chloral the better; I think there is less waste and more chloral obtained for the same quantity of alcohol. It is a curious circumstance that hydrate of chloral is produced by passing the chlorine into absolute alcohol, and this shows that water is one of the results of the decomposition of the alcohol; yet if hydrated alcohol be used, the product is different. I have tried different degrees of strength of alcohol, from absolute down to ninety-two per cent., and have obtained good results only from absolute alcohol. 16 gallons of such alcohol, in 28 days, with the use of about a ton and a quarter of mixture of binoxide of manganese and common salt, and about the same quantity of sulphuric acid—the 16 gallons of absolute alcohol weighing about 92 pounds—I obtained about 160 pounds of crude hydrate of chloral. This crude hydrate of chloral, as it is made by the passage of the chlorine into the alcohol, is contaminated with several other products which pass over in the distillation, and cannot be separated by simple distillation. It is necessary, therefore, to apply sulphuric acid in the purification of the chloral. Concentrated sulphuric acid is shaken with the crude hydrate of chloral, and the dehydrated chloral is then distilled off from the sulphuric acid. In this way we get chloral that is free from water. After purifying this by one or two applications of sulphuric acid, then the stoëchiometric proportion of water is added, and it is either sublimed or crystallized. In connection with this hydrature allow me to go back to the name of chloral. I propose to call it simply chloral,—not hydrate of chloral, nor chloral hydrate. It seems to me surplusage, as we do not in our language commonly call hydrated compounds hydrates; that is, we do not usually recognize the presence of combined water in the names of chemical compounds.

We do not say hydrate of sulphuric acid, or hydrate of hydrochloric acid, and in this case we shall save a good deal of nomenclature that is useless by calling it simply chloral. We heard yesterday, that the bees by taking a little honey from each flower gathered thirty millions of pounds. Every flower and every bee helps to make the aggregate. A certain amount of nervous force is expended on every word we utter, and if we save this word now (and now is the time to start), it will save an aggregate of nervous force which, in the future, will amount to a great many lives. I don't believe in useless language, particularly where it can so well be avoided, and, therefore, think, we had better call this from the beginning, simply chloral, although the other name is pretty generally used.* The difficulties in the

* While this note is being prepared for publication a serious mistake by abbreviating the words Hydrate of Chloral to "Hyd. Chlor." in prescription, was corrected in time to avoid danger.—E. R. S.

way of making chloral are very numerous. The apparatus I have now at work is, about the tenth modification from the first one, and I started with all the knowledge on the subject then in the books. The liberation of chlorine from common salt and black oxide of manganese by running sulphuric acid into it is easy enough, but unless the current be steady the result is imperfect, and there can be no good or definite calculations made as to the time or the quantity. The black oxide of manganese and common salt need both to be assayed and added together in their equivalent proportion, and then the calculated amount of sulphuric acid in any given specimen is to be made upon its specific gravity, and the acid can only be added to the mixture by calculation, because, if added until chlorine ceases to be eliminated a great excess will be used. I mix 100 pounds of the mixture of black oxide of manganese and common salt with about ten gallons of water in a still, and then run seven gallons of 60° slowly into it, using "pan acid," 1.562 specific gravity, using a mechanical stirrer, and heating the mixture. In this way a tolerably uniform current of chlorine is eliminated. This is then conducted to the drying apparatus, which consists of a three-neck Woulfe's bottle, with a long narrow glass percolator ground into the middle neck. This percolator is filled with pieces of broken glass from which the fine particles have been sifted out, and into the top of this broken glass, concentrated sulphuric acid is supplied from an elevated reservoir. This acid percolates through the broken glass and accumulates in the Woulfe's bottle below until it reaches the level of an adjusted siphon, by which it is discharged through one of the necks of the bottle. Through the third neck the chlorine enters by a tube which dips under the acid in the bottle. Thus the gas is made first to bubble through the acid in the bottle, and then to pass over the extended surface of broken glass in the tall percolator, this surface being kept moistened with fresh portions of acid, and thus becomes thoroughly dried and in the proper condition to enter the alcohol. The chlorine thus passed down into the alcohol at first increases the volume of the alcohol by one-fourth. At first, the whole of the bubbles of gas are absorbed, and the alcohol increases in volume and becomes heated, the bottle requiring to be kept cold; but after about three days the reaction between the chlorine and alcohol becomes more sluggish, and then a little heat in the bath is necessary. From that time the bath is made gradually warmer until the end of the process, which is determined by the gas pressing unchanged through the hot liquid in the bottles. The product is then the crude hydrate of chloral. Then if the contents of the bottles be allowed to cool a large proportion crystallizes. It will not run from one part of the bottle to another, but still is very moist. This is taken in portions of about twenty pounds at a time and shaken up with six to eight pounds of strong sulphuric acid, the whole mixture poured into a tubulated retort and the chloral distilled off. This is received in a clean, dry vessel, is weighed, and then partially hydrated with a weighed quantity of water. Carbonate of lime and slacked lime are then added in the proportion of four ounces to each twenty pounds, and the mixture is again distilled from a clean apparatus. The result of the distillation now is partially hydrated chloral; it distils better

partially hydrated than when hydrated entirely. The remainder of the water required by stoichiometrical calculation is now added, and the hot liquid poured on plates to crystallize, the plates being covered by a bell glass. In a few hours the crystallization is complete, and if well managed the contents of the plates is in a solid cake, which is rubbed into a coarse, damp powder in a clean mortar and filled into bottles.

Some accidents of an apparently trivial nature seemed to indicate that chloral is very liable to decomposition from contact with organic matter, but experiments have shown that it is not equally liable to this decomposition from all kinds of organic matter. Even the same kind of organic matter does not always produce the same effect with the same chloral. For example, where syrup of orange-peel is used as a vehicle, decomposition, with the production of hydrochloric acid, will sometimes commence in a day or two, and sometimes not for weeks, though the apparent conditions be the same. One observer will testify that with simple syrup it never spoils or decomposes, while another, equally trustworthy, will find the same chloral decompose with simple syrup very promptly. Under such circumstances, the only safe practice is to keep chloral as free as possible from all organic matter until we know more about it; and this particularly in view of the harm it does when given in even a partially decomposed solution. It appears to be by far the best practice to dispense it in simple watery solution in glass-stopped vials, since in this condition it keeps indefinitely, and can be added to any desired vehicle at the time of taking. And ice-water appears to be about as good a vehicle for this, as for all saline substances, as any yet devised. When given to patients who have been long fasting it is often found to disagree with them, or at best to affect them less favorably than when given near a meal, or when the gastric secretions are not in the condition of long fasting. Hence the syrup of orange-peel, or the mucilage, &c., with which it is common to give it, may not be without useful effect, and those physicians who have now abandoned these mixtures for the simple solution, often, if not generally, advise their patients to eat a cracker, or take some other light food in small quantity, before or immediately after an hypnotic dose. When the medicine affects persons unfavorably, it should always be examined for hydrochloric acid by smelling and tasting, and by litmus paper. Nitrate of silver is too sensitive a test, for if the solution have been some time made, and especially when water containing organic matter is used, a cloudiness may be produced with this test which it is quite safe to disregard.

If the chloral be given under favorable circumstances, only about eight to twelve minutes elapse before the patient is asleep. If the first dose, namely, the ordinary dose of twenty to thirty grains, is not effective, a second one may be given in fifteen minutes. For if the effect be not obtained in fifteen minutes it is not likely to be experienced at all. If the second dose is inoperative, the physician may conclude that the medicine is inappropriate, since the heroic quantities that have been given have generally produced unpleasant effects. Unpleasant effects are, doubtless, often due to bad quality in the chloral. Of the various grades of it now in the market, it is, perhaps,

not too much to say that a large proportion of it is unfit for use; none of it is as good as it should be, or as it will be when the makers get to know better how to make it, and when those who buy know better how to test it, and what to reject. Makers have generally followed the first usage, and placed it in the market in hard compact cakes, or, frequently, some made by sublimation, others by pressure, but this form or condition is by no means either a guarantee or indication of purity, but, on the contrary, is often a mask for impurities. There is no process of purification that, in my hands, has given such uniform good results as simple well-managed crystallization. In results, I much prefer it to the common method by sublimation, as the natural impurities seem to be more easily and more perfectly separated. Beside it yields a softer cake, which should be broken up into a coarse powder before bottling. The present German practice of putting it up in hard compact cakes, necessitates its being thinned out and rubbed up before it can be weighed for dispensing, a proceeding which is not only troublesome, but renders the chloral liable to be spoiled by contact with metallic spatulas, dust, &c. The process by crystallization yields a chloral not quite so dry as sublimation, but the chloral is not the worse for this, since one of the very purest samples of chloral which I ever saw was of German make, and quite moist in ordinary weather, and almost liquid in hot weather. The drier it is the nicer it is, but not always better. By a little skill, and management it may be obtained in quite large crystals, but these are no better, and have the same disadvantage as the cakes or plates, in requiring to be rubbed up before they can be dispensed. The small granular crystals, moderately dry, is, perhaps, practically, the best form for use. In all its forms it is very sensitive to a moist atmosphere, and deliquesces rapidly; but in a dry atmosphere it evaporates without liquefying or deliquescing at all. Damp chloral will, therefore, dry by exposure in a dry cool atmosphere, and I have seen the same specimen alternately become solid and liquid several times in succession by the natural changes of the hygrometric condition of the weather. Indeed, the result of a very successful crystallization may, if the cakes be rubbed up and bottled on a damp day, yield an unusually damp powder. But while dampness or dryness alone should not be accepted as conclusive evidence of bad or good quality, yet parcels which are so moist that the liquid settles out from the crystals should always be rejected. Freshly made solutions of chloral, especially if made from large crystals, are often more or less opalescent or milky, and this milkiness may continue for a few moments only or for many hours, but if the chloral be of good quality the solution will sooner or later become perfectly clear, or will at once become clear on being warmed. Solution of nitrate of silver should give no reaction, or but the faintest cloudiness, with freshly made solutions of good chloral. But a little dust in the chloral, or a little organic matter in the water with which the solution may have been made, will soon give a decomposition sufficient to produce slight cloudiness with this test. If the solution has been kept in a cork-stopped bottle it will always give a cloudiness.

The alcoholate of chloral, which is a very different salt, and much more easily made, has been largely sold for the hydrate, and is often not easily

distinguished from it, is characterized by a higher melting and boiling point, and by yielding less chloroform upon volumetric decomposition. But as yet more simple and easy tests for the alcoholate are much needed—not so much to enable us to distinguish between them, when separate, for this is comparatively easy, but to detect the presence of the alcoholate either as an adulteration or an accidental impurity in the hydrate. Whilst so great a proportion of the chloral in the market is imperfect, or, impure and bad, there are several makers whose products are, perhaps, equally good. Therefore, so long as we know so little about it, and are so much in need of simple and easy tests of quality, the maker's name should always be required on the label, and no unknown make should be used, however contrary to common usage this may be nowadays, when price and profit have become the prominent consideration in all things.

The recrystallization of chloral from very volatile liquids, in which it is very soluble, has not, in my experience, been either satisfactory or useful, although we have the high authority of Dr. Flückiger to the contrary.

Chloral appears to be a hypnotic and not an anæsthetic; it produces sleep, but it will not often relieve pain when the pain arises from any organic disease. If it be inflammatory pain or pain from injury, it does not relieve it, although it sometimes forcibly superinduces sleep. A person may have suffered an injury and take a large dose and get six or seven hours' sleep, but on waking the sleep will be found to have been unrefreshing. The knowledge of how to use it is not complete, but experience is accumulating every day upon it. Our greatest interest in it, is to know how to select, keep, and dispense it ; as it absorbs moisture and becomes moist in a damp day, and becomes the opposite in a dry northwest wind, and is so liable to decomposition under conditions not yet well known, it of course requires much care and attention. The dose is from ten to one hundred and twenty grains, according to the purpose with which it is given and the varying susceptibility of persons to its influence. I have only heard of a fatal effect from it in one case, and then an entire ounce was taken. I don't remember to have heard of a single case where ten, twelve, or fifteen grain doses produced any disagreeable effect, but they are not so likely to produce the hypnotic effect in most cases as doses of twenty to thirty grains.

MR. MARKOE.—Is the purification of chloral hydrate by recrystallization with bisulphide of carbon necessary ?

DR. SQUIBB.—I have not seen the paper.

MR. MAISCH.—It is not necessary to recrystallize from bisulphide of carbon, because it is soluble in other solvents, ether and oil of turpentine; but from bisulphide of carbon it is obtained in very large and handsome crystals, even when operated upon in small quantities. These crystals are so large, and the appearance of it when crystallized from bisulphide is so entirely different, that it bears on its face the stamp of purity. For this reason Dr. Flückiger prefers bisulphide of carbon. He says there is scarcely any loss, because nearly all the bisulphide can be recovered, and gradually, as the amount of impurities increase in the mother liquor, the bisulphide of carbon

is distilled, which is merely to free it from the impurities. The entire amount of chloral hydrate is obtained, and on drying, the bisulphide of carbon very readily evaporates from the crystals.

DR. SQUIBB.—Is it soluble in cold bisulphide of carbon, or only soluble in hot?

MR. MAISCH.—The difference of solubility at a low and a high temperature is very great. Dr. Flückiger uses the same bisulphide repeatedly for purifying, and when the impurities collect to too great an extent, he purifies the liquid by distillation.

MR. EBERT.—It is but sparingly soluble in cold bisulphide, while it is very soluble in warm bisulphide.

MR. MARKOE.—At the urgent request of several physicians in Boston, at the time that chloral hydrate was just coming into notice, and before it could be had in this country, I undertook its manufacture and worked with it about six months. I met with many difficulties, but gradually overcame them, and the last lot that I prepared—about fifty ounces—was quite as nice as any that I have seen in the market. I stumbled on a good many of the difficulties Dr. Squibb did. Dr. Squibb has not said anything about the peculiar character of anhydrous chloral. It has some very curious features, in its normal form being a thin, colorless liquid, making a greasy spot on paper which soon disappears, a pungent odor which affects the eyes and irritates the skin. Its specific gravity is 1.502; mixed with a little water it gives off much heat, and on cooling crystallizes. Chloral hydrate is $C_2HCl_3H_2O$. Anhydrous chloral passes spontaneously into an insoluble form, becoming solid and very much like porcelain in appearance. In this form it is insoluble in water, alcohol, ether, chloroform, &c. To reconvert insoluble chloral into its normal liquid form is a matter of a great deal of difficulty, requiring redistillation with sulphuric acid at a very high temperature. By being interrupted I had this result take place, and attempting to keep the chloral over night found it turned into insoluble chloral. I looked around for some substance to add to the anhydrous to prevent this change, and found that the addition of a small quantity of chloroform would completely control the tendency of the anhydrous to pass into insoluble chloral, and that in no wise interfered with the subsequent hydration of it. After distilling my crude product with sulphuric acid, it was necessary to redistil it two or three times with sulphuric acid. Where night intervened I almost always found I had the insoluble. A sample of this insoluble chloral which I have had since last September, I find gradually to evaporate. In the bottle on top of it there are some minute crystals, which appear to be perfectly soluble. It attracts from the air sufficient watery vapor to form the hydrate, and when first formed it looks not unlike porcelain.

MR. REMINGTON.—Can Dr. Squibb give any opinion as to whether there is any way to purify chloral that has become discolored?

DR. SQUIBB.—By shaking with sulphuric acid, dehydrating it and redistilling it again; that is the only way.

MR. MAISCH.—Dr. Flückiger states that the chloral, by perfect crystallization, loses its odor and particularly its pungency, almost entirely.

DR. SQUIBB.—I have been in the habit of putting it up a little short of thorough hydration. That is to say, if the chloral demands that twelve per cent. of water be added to it for its perfect hydration, I have usually added ten per cent. only, so as to leave a small portion of the chloral partially hydrated only, the remaining water to be supplied from accidental or necessary atmospheric exposure in dispensing, and from the water for solution, as it is always administered in solution. This adds a little pungency to it when it is first opened, but it is a very safe way to guard it from being less than the physician expects, and also from deliquescence.

MR. MARKOE.—Another curious product which I obtained, was a small quantity of one of the decomposition products obtained by distilling the crude chloral with sulphuric acid; a crystalline, insoluble body, which has received the name of chloralide. This, when treated with hydrate of soda, splits into chloroform and formiate of soda.

MR. REMINGTON.—Will Dr. Squibb state the yield?

DR. SQUIBB.—I obtained from 16 gallons of absolute alcohol, 160 pounds of crude chloral, which, when purified, yielded in the neighborhood of 125 pounds of purified hydrate of chloral. That is about the best yield I have had. I have now about 65 gallons in process all the time, by a series of baths, by which I expect to get 140 pounds or thereabouts every week, or every ten days; that is, each bath being of a different age and being finished in about thirty days, will give one bath or process every ten days. It will thus be seen that it is not a very profitable preparation to make, particularly when made in competition with the German article, and I believe I should never have undertaken to make it, except for my conviction that it is the most important of all the additions to the *materia medica* for many years past, and very commonly sent to our market from abroad of bad quality, and without any traceable responsibility in regard to quality or make.

MR. MARKOE.—My experiments were made on a small scale with crude apparatus. The apparatus I first used were glass flasks for generating the chlorine gas, and working with twenty ounces of alcohol—Dr. Squibb's alcohol—and I got a yield of ten ounces of finished chloral. Afterwards for generators I used ordinary four-gallon stone jugs, using ten pounds of sulphuric acid with the proper quantity of salt and oxide of manganese, and drying the chlorine by passing it through sulphuric acid. The last experiments six months ago were larger; from forty-five ounces of absolute alcohol made by myself, gave a yield of about fifty ounces of chloral. For making this quantity it required three weeks, the chlorine running through the alcohol pretty nearly all the time.

In accordance with resolutions previously passed, the President appointed the following Committees:

Committee on Legislation—John M. Maisch, Philadelphia,

Pa.; E. H. Sargent, Chicago, Ill.; Robert S. McMurdy, Albany, New York; Henry J. Menninger, Raleigh, N. C., and Matthew F. Ash, Jackson, Miss.

Committee to report on the practicability of inviting the International Pharmaceutical Congress to meet in this country in 1876—Professor William Proter, Jr., Philadelphia, Pa.; Albert E. Ebert, Chicago, Ill., and Dr. Frederick Hoffmann, New York.

The Executive Committee reported the application of the following gentlemen for membership:

<i>District of Columbia.</i>	<i>Kentucky.</i>
E. Bury, Washington.	William Strassel, Louisville.
<i>Kansas.</i>	<i>Pennsylvania.</i>
Henry Sanford Physick, Leav-	J. B. Duble, Williamsport.

On motion, the President was directed to deposit an affirmative ballot in favor of the candidates, which being done, they were declared duly elected.

Mr. William T. Wenzell read a paper on Pharmacy in California, which was, on motion, referred to the Executive Committee.

On motion of Dr. Squibb it was resolved that when we adjourn, we adjourn to meet in St. Louis, Mo., on the second Tuesday of September, next year.

The Business Committee moved that the hearty thanks of the Association be tendered to the retiring officers for the efficient and courteous manner in which they performed their duties. The motion was agreed to.

The Secretary read the minutes of the fifth session, which were approved.

The Association then adjourned.

JOHN M. MAISCH,
Permanent Secretary.

The pharmacists and druggists of Baltimore were very attentive to the members of the American Pharmaceutical Association, and their ladies, who attended the last meeting at the Monumental City. Besides conducting them to the various places of interest, and showing them some of the enterprising establishments of their city, they extended a cordial invitation to the visitors to an excursion on the steamer Champion, Captain Crosby, down the beautiful bay to Annapolis. The steamer left her wharf on Light Street at 12½ o'clock on Friday, September 16th, and passed, among other points of note, forts McHenry and Carroll, and reached Annapolis at 3½ o'clock. Through the exertion of our fellow-member, Mr. Daniel B. Street, the grounds and buildings of the Naval Academy were open for inspection; and the monuments, trophies, the laboratory and cabinets, the practicing ships and monitors received their due share of attention. The Capitol was visited, from whose dome a splendid view was had over the bay and surrounding country.

On the return trip Holly Grove was reached before dark, where an ample supper awaited the excursionists; after which dancing was indulged in to the music furnished by Winter's excellent band, who enlivened the entire trip.

Shortly after the boat had left the wharf at Holly Grove a meeting of the visiting members was called, and Mr. Grieve, of Georgia, was called to the chair.

Mr. Sargent, of Chicago, offered the following resolution, which was unanimously adopted:

Resolved, That the visiting members of the American Pharmaceutical Association at Baltimore, hereby express their heartfelt thanks to our brothers in Baltimore for their delightful excursion, and all the attendant circumstances connected therewith, which they have so liberally provided.

The pleasure we have so much enjoyed will bring happy recollections for many years.

The following resolution, offered by Mr. Shinn, of Philadelphia, was unanimously adopted:

Resolved, That the thanks of the members of the American Pharmaceutical Association and their friends, are hereby tendered to the United States officers at the Naval Station at Annapolis, for their courtesy in opening the United States buildings and grounds to them for inspection.

Three hearty cheers were proposed and given for Baltimore.

Speeches were then made by Messrs. Tufts, Pile, Colcord, Dr. Goldsmith, and Mr. Hinkley, of Baltimore, Messrs. Ebert and Moore, after which "Auld Lang Syne," and "Home Sweet Home," were sung. At 10 o'clock the boat reached her wharf, and the visiting members bade adieu to their Baltimore friends, highly pleased with their attendance at the Eighteenth Annual Meeting of the American Pharmaceutical Association.

JOHN M. MAISCH,
Permanent Secretary.

SPECIAL REPORTS AND ESSAYS.

ON THE ARTIFICIAL PREPARATION OF MANNITE.

BY JOSEPH M. HIRSH, OF CHICAGO.

QUERY 8.—The relation of mannite to glucose in composition is very close. Can mannite be prepared artificially? and if so, how? And has it the same physiological properties?

THE preparation of artificial mannite, attempted at the instance of this honorable body, has been but a partial success, in so far as I could not in every instance obtain a product of exactly the same composition from the raw material, commercial glucose. Trials with pure grape-sugar invariably failed, in my hands, to produce that peculiar nauseous principle characteristic of manna.

For the sake of brevity, I shall mention the outlines of my experiments in this direction.

I made glucose in the usual manner from starch, leaving about ten per cent. of dextrine in the same undecomposed, but did not concentrate the glucose more than to 15° Beaumé. To this solution I added five per cent. of wheat flour, five of molasses, and as much of common malt vinegar, when the mass was at a temperature of 100° F. In twenty-four hours a lively fermentation had set in, which continued for three days, when I concentrated the liquid, which then showed the peculiar nauseous taste and odor of manna. Digested with alcohol, mannite dissolved, crystallizing upon evaporation of the alcohol, while dextrine and other impurities remained behind undissolved.

The peculiar nauseous principle appears to be partly decomposed matter, undergoing a gradual change into humus. Whoever has been in a vinegar factory, badly conducted, where poor ventilation produces an incomplete oxidation of the alcohol, but rather decay, must at once be struck by the resemblance of this odor to that of manna. It was this experience which induced my experiments in the manner mentioned above, the gluten of the wheat flour forming, together with the vinegar, an excellent ferment of putridity, which not only produces the nauseous, humus-like parts existing in manna, but also the molecular change of cane and grape-sugar, which converts it into mannite.

This artificial manna, in its action as a laxative, equals the true manna, and very likely the presence of a substance in a state of change, the active principle, is the same in both the true and the artificial manna. The mannite produced in this manner does not reduce alkaline cupric tartrate, showing the complete change of the glucose; but your reporter would beg leave to complete his researches, viz., on the elementary analysis of the artificial product, which pressure of business has prevented him from completing.

An accompanying sample of the manna produced will show how far my attempts have been successful.

ON A MORPHIOMETRIC PROCESS FOR THE PHARMACOPÆIA.

BY WILLIAM PROCTER, JR.

THE question, "What is the best process for assaying opium to determine its morphia strength, suited for adoption into the United States Pharmacopœia?" was accepted by the writer at the Chicago meeting.

Reflection on the query suggests that it is not so much what is the best analytical process, as to decide what process is best suited for practical use by druggists and pharmaceutists in determining the morphia value of opium for the purposes of the

Pharmacopœia. Those who take the view that the process should embody the nicest and most refined manipulations of the analytical laboratory, may not accept this view, but when it is understood that a large majority of the persons needing its use are not analytical chemists, it is believed that simplicity, united to a fair degree of accuracy, is more available than extreme accuracy, beyond the reach of most apothecaries, applied in a complex process.

So many able chemists have published processes, some of which are well known in connection with their names, as Staples' process, Mohr's, Guillermond's, &c., that the ground would appear to be well examined. The process of Staples is that of the United States Pharmacopœia. Its point is in the employment of alcohol to retain the coloring matter in solution during the precipitation of the morphia, and in mixing the ammoniacal precipitant also with alcohol. The process of Mohr avails itself of the selective power of boiling lime-water to reject narcotina, and retain morphia in solution. Both of these processes extract the opium with cold water. Guillermond's process employs alcohol of 71 per cent. to extract the opium, which is then precipitated by ammonia. The precipitate, as in Staples' process, contains narcotina.

One difficulty in extracting the portion of opium soluble in water is the caoutchoucoid matter which tends to resist its solvent action. The idea of employing benzine or light coal oil to remove this, as well as the free narcotina, has been suggested by Albert E. Ebert for another purpose, and has been used by Dr. Flückiger in his examination of opium. It is believed that the preliminary use of this solvent in opium assays may be usefully adopted.

Believing that the best way to arrive at a solution of the query was to try several processes with the same solution of opium, a sample of nearly dry opium, weighing 300 grains, was triturated to coarse powder, and then rubbed with repeated portions of water, until finely divided and macerated in six times its weight of water for twelve hours, then percolated on a filter until the washings were nearly colorless. The united liquids (amounting

to 4500 grains) were divided into three equal portions, each representing 100 grains of opium.

No. 1. The solution was evaporated with moderate heat to half a fluid ounce, mixed with an equal bulk of alcohol (sp. gr. 835), filtered through a small filter, and the latter washed with a little diluted alcohol. 50 minimis of solution of ammonia (sp. gr. 960) was mixed with 2 fluid drachms of alcohol. One-half of this was added to the alcoholic solution of opium with agitation, and allowed to stand six hours, when the remainder of the ammonia was mixed in and the vessel permitted to rest for twenty-four hours. The crystalline matter deposited on the interior of the vial being detached, the contents were at intervals poured on a small-tared filter, and the crude morphia washed, first with diluted alcohol and then with water, dried at 120°, and weighed. The product was 9.75 grains. This was treated several times with boiling non-alcoholic ether, and the ethereal solution evaporated in a small-tared capsule gave 0.31 grains of crystalline prisms, equivalent to 0.31 per cent. of narcotina, and 9.44 per cent. of morphia in the opium examined.

No. 2. This portion was treated with solution of subacetate of lead till it ceased to be precipitated, the precipitate separated on a filter and well washed, the filtrate treated with diluted sulphuric acid by drops to separate the excess of lead as sulphate, and filtered. The clear solution by moderate heat is reduced to half a fluid ounce, mixed with its bulk of alcohol filtered, and the filtrate mixed with fifty grains of solution of ammonia containing alcohol in two portions, added half an hour apart, and allowed to stand twenty-four hours. The morphia was deposited in large distinct crystals, very few of which were attached to the interior of the vessel. They were collected on a filter, washed with diluted alcohol and water, dried and weighed 8.75 grains. This, repeatedly boiled in ether and the ethereal liquids evaporated, afforded but a trace of crystalline matter, too small to weigh and yet distinctly visible in minute prisms.

No. 3. This was mixed with sixty grains of lime, previously hydrated and boiled for fifteen minutes, the decoction filtered hot from the dregs, and these well washed with hot water. The

filtrate slightly acidulated with muriatic acid was evaporated to half a fluid ounce, mixed with its bulk of alcohol and filtered; an excess of alcoholic ammonia was added and mixed, and the vessel set aside for twenty-four hours. The colored crystalline powder and the portion attached as a crust to the interior, were carefully collected on a filter, washed, dried, and weighed, affording ten grains of impure morphia, more colored than either of the other results.

The use of alcohol in this process is intended to retain the coloring matter, yet did not succeed in producing a light-colored morphia.

The last result, according to Mohr, should contain no narcotina, yet when boiled to exhaustion in ether deprived of alcohol, the ethereal liquid afforded 0.75 grains of narcotina, making the result of morphia 9.25 per cent., and narcotina 0.75 per cent.

It will appear by a comparison of these results, that the Staples process, whilst less complicated than either of the others, yields a purer product than the Mohr process, and a slightly larger yield of morphia; whilst the process No. 2, which is suggested by the writer, affords the purest and best crystallized morphia, but is more complicated than either of the others. Hence, it is the first, or Staples process, that is to be preferred, modified by treating the powdered opium with warm benzine as a preliminary operation. The final success is greatly aided by conducting the evaporation of the liquor at a moderate temperature, which renders the product less contaminated with coloring matter. By reducing the bulk before precipitation to the extent noted above, the precipitation of the morphia is facilitated, whilst the crystals are equally light colored. By using benzine beforehand the extraction of the opium will be more thoroughly accomplished.

ON GLYCYRRHIZIN.

BY JOSEPH M. HIRSH, OF CHICAGO.

WHAT is the easiest and most practicable method of isolating glycyrrhizin; to what extent does it possess the power of masking bitterness; and what is its mode of action?

The mode of preparing glycyrrhizin, mentioned in the last Dispensatory, of precipitating the same from a cold infusion, I found highly impractical, on account of the slight solubility of the same in cold water. Berzelius's method of preparing it from sulphate of glycyrrhizin gave but a dark-colored product, difficult to purify, while Vogel's method of preparing a plumbate of glycyrrhizin, and subsequent decomposition with hydric sulphuret, is rather laborious. The best practical process appeared to be the preparation from an infusion made with *boiling* water of acetate of glycyrrhizin, which upon evaporation to dryness is dissolved in alcohol, when the acetic acid is neutralized with soda, the new salt crystallizing out, while the glycyrrhizin remains in solution. Another method, giving good results, I found to be the preparation of an alcoholic extract by percolation, which I heated to the boiling-point, filtered off from the deposit produced, when I evaporated nearly to dryness, redissolved in alcohol, from which solution it remained behind almost pure upon evaporation.

Experimenting with this product in regard to its relation to masking bitterness, I found one part to cover up the bitter taste of four parts of Epsom salts, a slight addition of the latter being plainly perceptible, although by no means as disagreeable as when tasted alone. Of an alcoholic extract of coffee, an amount representing twenty parts of coffee, lost its bitter taste upon the addition of the glycyrrhizin. A number of other experiments of similar kind were made, but your reporter respectfully expresses his doubts about the *mathematical* reliability of results, arrived at by taste alone, and confines, therefore, his remarks to the *modus operandi* of the glycyrrhizin.

Taste being an effect upon the nerves of sensation (of taste), the change of taste can be produced either by a chemical change

of a substance, or by a peculiar local affection of the nerves of taste. The first case, as might have been anticipated, with Epsom salts, does not occur, the glycyrrhizin not affecting the sulphate of magnesia in any way.

The second supposition then lay near, namely, that the nerves were rendered insensible to the bitter taste. This might be done by an organic change of nerve-matter, or by the interposition of a foreign body between the nerves and the bitter substance. To ascertain the former lay beyond the facility of your reporter, and I made, therefore, the best of the last supposition, which seems to give a true solution of the problem. When glycyrrhizin or liquorice dissolves upon the tongue, the latter soon becomes furred, coated, this coat being a coagulum of the albumen of the saliva with the glycyrrhizin. A few tests convinced me that even a weak solution of albumen coagulates readily with glycyrrhizin, and I took the artificial coating of the nerves produced by the albuminous coagulum of glycyrrhizin to be the true cause of its masking bitterness. If this was true, other substances, which readily coagulate albumen, should produce the same result.

With this idea I tried a solution of carbolic acid with various bitter substances, and in each case the bitterness was annihilated if the quantity of carbolic solution was sufficient. But while glycyrrhizin and its compounds are sweet, this is not the case with carbolic acid, the taste of which replaced that of the bitter substance with which it was mixed, this taste being in itself not agreeable. To remedy this evil carbolate of glycerine was tried with marked success. Epsom salts, coffee, absinthe, &c., lost their bitter taste when mixed with a sufficiency of carbolic glycerine.

ABIES CANADENSIS.

BY WILLIAM PROCTER, JR.

THE query on this subject referred to the writer was intended to embrace the whole subject of the botanical, commercial, economical, medical, and chemical history of the hemlock tree

(*Abies Canadensis*), based upon an inquiry by correspondence with parties largely concerned in the timber and bark trades, and on experimental inquiry in reference to the commercial extract of the bark, the resinous exudation called hemlock pitch, and the volatile oil of the leaves, all well known in American commerce.

Michaux, in the *Sylva Americana*, says that this tree is found as far north as Hudson's Bay, latitude 51°, and in his day (1812) constituted three-quarters of the evergreen woods of the Northern Atlantic States, Canada, and Nova Scotia. Since Michaux's time the country developed northwest has yielded vast quantities of this timber. In the Middle and Southern States it is found only in quantity on the Alleghanies.

Timber is the most important contribution of this tree to commerce, for although greatly inferior to that of several other evergreens, its great abundance and cheapness has caused its extensive use for framing, fencing, laths, and other uses. The habit of growth of hemlock to twist spirally in its trunk-fibres, is a serious defect in employing it for lumber, which is rendered cross-grained and fragile, whilst its coarse grain unfits it for fine interior work. Hemlock timber is particularly unfit for use in damp situations, as it decays readily; yet when saturated with a solution of sulphate of copper it is rendered fit for posts, railroad ties, and other similar uses.

The *bark* is the next in importance, in its bearing on the leather manufacture of the United States. Although not so valuable by percentage of tannin as oak bark, its great abundance and easy separation from the wood give it a cheapness that compensates for its inferior power. The association of a red coloring matter with the tannin gives to leather prepared with this astringent a red color, contrasting decidedly with that tanned with quercitron (black oak) bark, which produces a yellowish leather, due to the quercitrin or yellow coloring principle it contains. The idea of preparing extracts of bark for tanning purposes, probably owes its origin to the catechu of the East Indies being used. Hemlock bark from old trees contains a large amount of inert matter, the result of the action of the

air and other external agencies on the external broken cortical layers. For this reason the best bark for the tanner is that which has been partially deprived of its epidermis, and thinner than the specimen now exhibited, which I owe to the kindness of Mr. N. Spencer Thomas, of Painted Post, New York, who is largely engaged in the manufacture of Hemlock bark extract for tanning purposes, and who, in a paper printed in the *American Journal of Pharmacy*, 1866, p. 214, introduces it for medical use as a substitute for Rhatan Extract. This extract is sold wholesale at the low rate of ten cents per pound. It appears to have been made by the open boiling process previously, but the process of Mr. Thomas extracts the bark with steam and high pressure, and at a temperature above 212°, in an apparatus called by him a "high pressure and dumping leach," in which the bark evenly ground is lixiviated first by steam passing from above downward, and then by boiling water under the pressure of the boiler. Very concentrated solutions are thus made, which may be used at once for tanning if convenient, but the commercial extract is prepared by evaporating this solution in vacuo, until it solidifies by cooling.

It was the intention of the writer to investigate the tannic acid and the coloring matter of this bark, and as said last year, some experiments had been then made in that direction, but want of time, or more properly, neglecting the right time, has entirely prevented extending them to a result that would be of any practical use. It was also his intention to have examined the substance called Pix Canadensis in the United States Pharmacopœia, which is the oleo-resinous matter which exudes from old hemlock trees and solidifies on the rugged bark, and which is extensively used in this country like Burgundy Pitch for similar purposes; to determine the amount of resins and volatile oil, and the relation of the latter to the volatile oil of the leaves, which also was to have received attention in relation to its chemical and physical characters. Thus much in illustration of the writer's idea of the theme submitted to him by the Association, under the title of "An Essay on *Abies Canadensis*, and its Products yielded to Medicine and the Arts," and which he

having failed to realize, by not devoting the necessary time, and doubting the probability of his being likely to do better, desires to be excused from further responsibility in regard to the query, hoping that some fellow-member will adopt it.

INDIGENOUS DRUGS.

BY C. LEWIS DIEHL.

To write an article upon a subject that has not been completely investigated is, perhaps, the most unsatisfactory task imaginable, and this appears to be allotted to me in the present paper. When I accepted Query 23, for 1868, I had no idea of the difficulties to be encountered in its proper solution. Apart from those of a purely personal character, I have met with the greatest difficulties in obtaining answers to inquiries from parties who could, if inclined, have given the desired information. Yet some little information has been obtained, which, however meagre, I propose to give in the following.

My sources of information are various. In some few instances I have received responses from those directly or indirectly engaged in the collection of indigenous drugs; but generally I have been obliged to depend upon that obtainable from wholesale dealers, to whom consignments had been made by parties doing business with them.

It is a remarkable fact, that our Louisville wholesale druggists depend upon the New York markets for their supplies of indigenous drugs, many of which abound and frequently are collected in our immediate neighborhood. Our retail dealers are supplied with limited quantities by several gatherers living among the range of hills in the neighborhood of New Albany, Ind., known as "the Knobs." Formerly there was a lively trade in indigenous drugs in New Albany; but such is not now the case, and the drugs gathered in its neighborhood find their markets no farther than our city. Our immediate neighborhood, on the

Kentucky side, also contributes to our supplies through a few small gatherers, chiefly Germans; but taken altogether, our home supplies far from meet the demand of our retail trade, and generally bring better prices than those obtained from a distance. The drugs principally collected in our neighborhood—of which the largest part among the Knobs near New Albany—are: *Podophyllum*, *Leptandra*, *Caulophyllum*, *Lobelia*, *Cimicifuga*, *Gelsemium*, *Ulmus*, *Stillingia*, *Xanthoxylum*, *Phytolacca*, *Asarum Canadensis*, *Cornus Florida*, *Panax*, *Aralia Nudicaulis*, *Aralia Racemosa*, *Sambucus*, *Cataria*, *Mentha Piperita*, *Hedeoma*, &c., and limited quantities of *Serpentaria*, *Spigelia*, and *Senega*. These abound also, and are collected in the counties of Shelby, Monroe, Brown, and Morgan; and one of our principal establishments has lately negotiated for a full line of indigenous drugs from Pembroke, Kentucky.

My information seems to indicate that the mountainous regions of Kentucky, especially Eastern Kentucky, contribute largely to the supplies of our Western dealers in indigenous drugs. From East Tennessee and Western Georgia large quantities may be and undoubtedly are obtained. Several years ago I had offers from a party in Chattanooga of quite a line of indigenous drugs. Where they find their market I am unable to say, but incline to the belief that the principal collections reach New York by way of Savannah, Ga. In many of the Southern States this branch of trade appears to attract considerable attention since the war, mainly in mountainous and swampy sections. In the neighborhood of Walhalla, South Carolina, quite a brisk industry has sprung up, and large shipments are made from there to New York, through the agency of Charleston firms. The drugs collected there may be enumerated in the following:

Panax, *Senega*, *Cypripedium*, *Liatris Spicata*, *Spigelia*, *Sanguinaria*, *Aralia Nudicaulis*, *Aralia Racemosa*, *Asclepias Syriaca*, *Asclepias Tuberosa*, *Rumex*, *Podophyllum*, *Hepatica*, *Rhus*, *Rubus Villosus*, *Cimicifuga*, *Marrubium*, *Stillingia*, *Spirea Ulmaria*, *Aletris*, *Convallaria Polygonatum*, *Tussilago*

Farfura, Phytolacca, Ulmus, Goodyera Pubescens, Frasera Carolinensis, Arum, Solidago Odora, &c.

Occasionally, consignments of Senega, Serpentaria, and Spigelia reach our markets from Arkansas direct. Several years ago I purchased several bales of Senega and Spigelia, consigned to one of our wholesale houses from Ozark, Arkansas. It proved to be a poor investment, as the interior of the bales consisted largely of stems, and had to be garbled. The drug-gatherers of the Southern States being generally small farmers and negroes, make no regular profession of it, and only collect as their time permits. Hence the difference in the yield of these drugs between one year and another. They are disposed of by them to the nearest country storekeeper, who on his part consigns them to the wholesale dealer with whom he may happen to do business. I am told by reliable informants that the drugs collected in the Red River districts seldom reach our markets except by way of New Orleans and New York, and that when they do reach us direct, they are generally inferior in quality. One of our principal wholesale drug-houses buys its supplies of indigenous drugs exclusively from a New York firm, and nearly all of the others depend upon the same firm when they cannot obtain bargains nearer home. When first making inquiries regarding the collection of indigenous drugs, I met with the invariable response, "*Inquire in New York.*"

Regarding the method of collecting and preparing the drugs for market, I can give you but little direct information. I have before me a circular addressed to drug-gatherers by one of our principal Western dealers in indigenous drugs, from which I extract the following:

"Most medicinal roots are perennial (that is, the roots continue more than two years, whether the leaves continue or not), and should be gathered any time between maturity or decay of the leaves or flowers, in the summer or fall, and the vegetating of the succeeding spring. Biennial roots, or those that live but two years (like burdock and yellow dock), should be collected of the growth of one year—any time between Septem-

ber and the time they commence running up to seed in the following spring.

"Barks should be gathered as soon after they will peel in the spring as possible, and all the moss carefully removed. It is usually best to fell the tree and remove the moss while the bark is on the tree.

"Leaves and herbs should be collected just before they mature, and before they begin to fade; the stems and stalks rejected, as when dry they are a hard woody substance, nearly inert.

"Flowers when they first open; and

"Seeds just before they are quite ripe, as they, like leaves and flowers, ripen after being gathered.

"Roots should be thoroughly cleansed from dirt and foreign substances, and if large, like Indian turnip, &c., sliced.

"All the above articles should be dried; the sooner the better. For the first few days it is best to expose them to the sun and air, avoiding any dew or dampness; then spread around on floor and shelves, watching them to see that they do not heat by being piled too thick, till nearly dry. Most roots require from three to six weeks to dry sufficiently to be safe.

"For shipping, it is best to pack them hard in coffee-sacks or large gunnies and burlaps; the next best is good flour-barrels."

These circulars appear to be distributed with great circumspection among herb-gatherers and country stores throughout the Southern and Western States, and in all probability serve as a guide to the gatherers. The few gatherers with whom I have been able to converse personally, proved very slow to give information, but from their conversation I judge that they preserve their collections on the general principles above specified.

It is a matter of sincere regret with me that I have been unable to do more than the foregoing towards the solution of Query 23, for 1868; but I feel sufficient interest in the question not to let it rest where it now stands, and shall do all in my power to give a better answer at the next meeting of the Association.

THE HONEY TRADE OF THE UNITED STATES,
DOMESTIC AND FOREIGN.

BY B. F. STACEY, CHARLESTOWN, MASS.

THIS article, which twenty-five years ago formed quite an insignificant article of trade in this country, is rapidly increasing year after year in domestic production; whilst the amount imported is growing smaller. While less is used for pharmaceutical purposes, it nevertheless is rapidly increasing in domestic use. It is also used largely by confectioners, and is an ingredient of many of the fancy beers which have recently become in vogue. Some dealers maintain that the honey which is the product of a cold climate, is vastly superior to that of warmer latitudes, which seems almost a contradiction to nature, as Southern lands teem with flowers far excelling as a base of supplies to the bees. One sample that the writer saw from Canada excelled all others in whiteness, clearness, and density. Samples from New York, Minnesota, Vermont, and New Hampshire, ranked next in order. The only way to obtain pure honey is to buy it in the comb, as nearly all the strained honey sold in the market bears unmistakable evidence of adulteration; this is however so well known and so easily discovered that it is unnecessary for me to dwell on it, and as the adulteration is mostly sugar and occasionally a little starch, to give it a whitish appearance, it is at least *harmless*; would that all the adulterations now in use were equally so. Out of ten samples purchased of different dealers, eight of them gave plain evidence of having been tampered with, the remaining two being samples from Cuba, right from the custom-house.

"In 1860 the total product of honey of the United States, reported, was 23,366,357 pounds." "New York stood at the head of the list with 2,369,751 pounds, followed in order by North Carolina, 2,055,969 pounds; Kentucky, 1,768,692 pounds; Missouri, 1,585,983 pounds; Tennessee, 1,519,390 pounds; Ohio, 1,459,601 pounds; Virginia, 1,431,591 pounds; Pennsylvania, 1,402,128 pounds; Illinois, 1,346,803 pounds, and Indi-

ana 1,224,489 pounds; all other States falling below 1,000,000 pounds." "Since the census of 1860 the statistics obtained have been partial and fragmentary; the statistics of Massachusetts for 1865 showed an increase of 26 per cent., and that of Iowa for same year an increase of 22 per cent. over the figures of 1860." "In the winter of 1868-69 the Department of Agriculture sent out circulars to known apiarians in most of the states, and received returns from 489 counties in 32 states. The aggregate number of hives reported was 722,385." "Estimating for counties not reporting, and making due allowance for the fact that many of the counties reporting were giving special attention to bee culture, 2,000,000 of hives were deemed as low a figure as the returns would warrant. Allowing fifteen pounds of surplus honey to the hive (about two-thirds of the average reported), the total product in 1868 would be 30,000,000 pounds, which at an average valuation of 22½ cents per pound, would give \$6,750,000." "In 1868 the quantity of honey imported was 212,176 gallons; value, \$117,172; of which 90,452 gallons, value \$50,569, were re-exported. A very small quantity of domestic honey was exported the same year. These figures show conclusively that an immense trade in honey has been built up in this country and is constantly increasing, which will eventually supersede all necessity of the importation of any from the West Indies." "A small township in Minnesota reports 262 hives; from these hives 2826 pounds of surplus honey was taken in the season of 1869." When we consider that the cost of production is merely nominal, it will be seen that it pays to keep bees.

The writer respectfully acknowledges his indebtedness to the Commissioner of Agriculture, for the statistical information.

ON FILTERING-PAPERS AND FILTERS,

With General Remarks on the Important Branch of Practical Pharmacy in which they are Employed.

BY JOSEPH M. HIRSH, OF CHICAGO.

ORIGINAL suggestions are almost impossible upon this practical topic, which, for we don't know how many centuries, has busied not only the master minds occupying themselves with the sacred healing art, but everybody almost in all vocations of life; and the excellent suggestions regarding filters, laid down in all works on practical pharmacy, will be a sufficient apology for confining the present essay to a few observations on the filtering-paper and filters in general use. The main object of filtration, with especial reference to pharmacy, being the separation of a clear liquid from a solid residue, we must demand as of prime importance of the filtering medium, that it offers a dense, uniform, unbroken surface to the liquid passing through it, so that no solid particles may pass through the same, the complete separation of which from the liquid is aimed at.

The most ordinary objects of filtration at the pharmacist's are the preparations of clear tinctures, and the restoration of such liquid preparations as have grown turbid or deposited a sediment by standing, respectively by decomposition; these latter instances being, a pity to say, by no means exceptionable. For this object paper is mainly employed as a cheap and convenient medium.

The general characteristics of good filtering-paper, like complete dense felting, uniformity, poverty in soluble salts, constituting its ashes, are well known, and your reporter can only repeat the experience of many of having found good Swedish filtering-paper, which filled all claims of prime quality made upon it. But it was always selected with some partiality, because upon repeated tests of the ordinary filtering-paper, obtainable in our backwoods town of Chicago, a sad deficiency was found. Obtainable were chiefly three qualities:

The French gray filters, coming in *round* sheets, ready for folding; *square* gray sheets, sometimes of lighter color and white; square sheets, so-called Swedish filtering-paper, which it might be, although the coolness with which it keeps its name is the only sign of its Northern home. It is not felted evenly, some spots being quite heavy, while others are so thin as to be semi-transparent, and others again permit not only the passage of light, but of solid tangible substance. In fact I could never obtain any Swedish filtering-paper here, but what had at least some pinholes. Of the gray filtering-paper, the round French, as also the square, twenty sheets in each hundred examined contained pinholes. Such paper is perfectly useless for the separation of some precipitates, while it may answer for the separation of others, such as would fill up even the gigantic pores of imperfect filters. In this case the first turbid filtrate would have to be returned upon the filter, upon which the deposition of the first precipitate then forms the true filtering medium.

The safest way in using such filtering-paper is to use a double filter, when the dense, unbroken sheet of the one, upon being moistened, will closely press against the sides of the second filter, thus closing up any imperfections present in the same, although there is one much better way, namely, not to use such filtering-paper at all. In some cases the use of double or even quadruple filters becomes necessary, even if the quality of the paper is excellent, as in the filtration of concentrated aqueous solutions of oils or carbolic acid, when a clear solution is desired. In this case the benefit resulting from the use of several layers of paper is not only due to the greater depth of the filtering medium through which the liquid has to pass, but to the different direction given to the liquid during its passage through each filter, so that it pursues a zigzag course through the different strata of paper, which is equivalent to a longer and more obstructed passage, with which the good effect of filtration increases. Paper filters, on account of the feeble strength of the material and its limited size, can only be used for operations upon a small scale; and for such we often find a preferable substitute in clean, well-washed cotton batting, a small quantity of which is pressed into

the neck of a common funnel, which then is filled with the liquid to be filtered. The cotton plug may be made as loose or firm as the filtering liquid demands; its dimensions, respectively its depth, may also be increased or decreased at pleasure, liquids of great fluidity passing readily through a dense and deep cotton plug; while syrups filter only through a loose plug, unless pressure is applied. For this purpose, also, cotton is preferable, as considerable pressure can be used to increase the speed of filtration; while paper would not be strong enough to resist that pressure without especial care and precaution, like using at the same time a filter of cotton cloth, which sustains the pressure, and upon which the paper filter lays, so as to make no folds, while the funnel which supports the filter must have exactly an angle of 45 degrees, so as to insure the close adherence of the filter to the walls of the funnel. A small platinum cone may also be slipped over the joint of the filter, having the same angle, to add to its strength to sustain the pressure. The further construction of pressure-filters has been so fully a subject of discussion in the pharmaceutical press, that I may safely pass it by with the suggestion that the simplest pressure-filter is a siphon, where filtration would take place upward through the short arm of the same. To do this successfully, the opening of this short arm must be very wide, narrowing down funnel-like to the tube, which should be of very small calibre. The difference in width between the short and the long arm must be very great, to render the siphon useful as a filter, for the reason that only a large opening closed by the obstructing filtering medium will admit through the latter a sufficiently large amount of liquid to keep the long arm of the siphon-tube filled. Should less than that amount of liquid pass through, air will enter and will at once disturb the action of the siphon.

On a large scale the pharmacist rarely has occasion to use filters except in percolation, which perhaps hardly belongs within the scope of this paper, since filtration has simply the object of separating a liquid substance from a solid one, while percolation proper, in the customary pharmaceutical sense of the term, by means of filtration accomplishes also the extraction of soluble

substances from the filtering medium. But the process being mainly one of filtration, your reporter ventures to present a few suggestions which he deems as applicable to pharmaceutical percolation as to filtration proper.

Filters or percolators should be constructed tall and narrow, so that the filtering or exhausting liquid should have to travel a great distance through a large mass of filtering material, or powdered drugs in the case of percolation, as only with the increased contact and surface the efficiency of a filter is increased. If of two filters of the same capacity, the one is twice as tall as the other, the tallest will be almost twice as effective, since in the shorter filter the liquid passes but half as long through the filtering material, withdrawing itself soon from the same, while each particle of liquid comes in contact with but half the quantity of filtering material, the paths which the filtering liquid passes, being increased in number in the same ratio as they are decreased in length.

Although used in the arts for many years, the practical application of this principle in pharmacy is of but recent date; namely, the use of fractional percolation, an apparatus for the same, or a series of filters, being in fact no more than a long tall filter cut into many short filters for the sake of more convenient handling, and more convenient separation of the exhausted part of the filter in the first one of the series. Here I would beg leave to remark that various suggestions in regard to fractional percolation, dictating the exchange of different filters in an especial order, with retention of some of the first filtrate (percolate), prior to its passage through *all* of the filtering material (powdered drug) appears to me arbitrary, since no percolate, no matter how concentrated, is so strong but what its passage through some fresh portions of unused drugs would increase its strength, the active principle of that part of the drug being exhausted at the same time to some extent, thus rendering more complete the work of exhaustion of subsequent portions of filtering liquid.

Fractional percolation, no matter whether two or an indefinite number of filters are used, should be so conducted that *each* par-

ticle of the filtering liquid would pass through *all* of the filtering material. This will insure a thorough exhaustion of the filtering material, and a corresponding thorough purification (in the case of percolation through saturation) of the filtering liquid.

Another point worthy of consideration is the difference in the results between upward and downward filtration. In the latter, the liquid, following its own gravity only, will select those paths where it finds the least resistance, namely, *around* the single particles of the filtering material, which to a great extent it will leave untouched and therefore unused. In upward filtration, on the other hand, the passage of the liquid is guided by hydrostatic pressure in a straight upward direction regardless of resistance, and the filtering material is more thoroughly exhausted. For liquids of low specific gravity, like oils, this mode of filtration is well established, because the water used in displacing the last portions of the oil is quite effective, consequent upon the difference of the specific gravity of the two liquids. But if an extract, a syrup, or other liquid, heavier than water, is to be displaced by that liquid, a partial diffusion of the same through water will take place. This is quite trifling if the liquid is well followed up by the displacing fluid (water), but has been deemed sufficient by some to form an obstacle to the practical application of upward filtration.

In experiments made in this direction, your reporter found that syrup weighing thirty-five degrees Beaumé, displaced by water, soon yielded a filtrate of but two degrees Beaumé, if the filter was kept at a temperature of about ninety degrees F., to insure fluidity of the syrup; the filtering material in this case was bone-black.

Where the thorough exhaustion of the last trace is of great significance, the filter, which for pharmaceutical purposes is rarely of great dimensions, might be made revolvable around an axis, so that top or bottom could be interchanged for the reception or discharge of the liquid filtered. Here the filtration might be carried on upward, and the exhaustion of the filter downwards. Pressure filtration, as also that with the exclusion

of air, can be carried on well and simply in the manner of upward filtration.

As to the material most useful for filtration to the pharmacist, I will mention besides filtering-paper, cotton batting for most ordinary liquids, for which might be substituted in many cases white clay, fuller's earth, when only turbidity is the motive for filtration.

In several instances it has come to the notice of your reporter that otherwise good pharmacists, who never would buy or make an inferior preparation, would filter liquids, like ferrated elixir of Calisaya, through large quantities of bone-black. The great absorbent power of bone-black was completely lost sight of. A plug of cotton batting would have been more appropriate. If bone-black is used for filtering pharmaceutical preparations, it should be completely freed from its phosphates by muriatic acid, the nitrogenous carbon remaining behind being a much more powerful substance for filtration (decolorization) than the ordinary bone-black, while it contains nothing soluble that would contaminate any pharmaceutical preparation.

For chromic acid, or similar oxidizing agents or caustics, the proper filtering medium is glass-powder or gun-cotton, while for the filtration of mercury a double layer of good chamois skin should be taken, and gentle pressure applied to effect the passage of the metal.

ON SOLUTION OF GUAIAC RESIN FOR MEDICAL USE.

BY JAMES T. SHINN, OF PHILADELPHIA.

QUERY 7.—What is the best and most eligible liquid form for the preparation and administration of guaiac resin?

THERE are two officinal liquid preparations of guaiac, the tincture, and ammoniated tincture, both of which are perfect solutions of the drug, but are very disagreeable in taste when given alone, or even when diluted with four or five parts of

water. The great desideratum is to find a menstruum which is a good solvent, readily miscible with water, and palatable; and although unsuccessful in this attempt, I will give some results of the experiments made.

Alcohol dissolves all the resinous portions of commercial guaiac, leaving from 20 to 25 per cent. of impurities, chiefly chips of the wood and sand, and the purified guaiac obtained by evaporating the alcohol from this solution is readily dissolved by its weight of that fluid. The officinal tincture (three ounces to a pint), will bear an equal volume of water or syrup and remain clear, and is miscible in any proportion with glycerine and liquor potassæ without producing turbidity.

Thinking a reduction in the amount of spirit might be an advantage, the following formula was tried:

Take of Purified Guaiac,	.	.	.	$\frac{3}{4}$ j.
Alcohol,	.	.	.	$\frac{1}{2}$ jj.
Solution of Potassa,	.	.	.	$\frac{1}{2}$ j.
Glycerine,	.	.	.	$\frac{1}{2}$ xj.

Dissolve the guaiac in the alcohol, and add the solution of potassa and glycerine.

This forms a clear and permanent solution, of pleasanter taste than the tincture when given alone, but when mixed with water producing about the same turbidity, and leaving the same acrid taste in the fauces. Glycerine does not mask this acridity as well as sugar, but the substitution of part syrup produced a precipitate of the resin.

Decidedly the most agreeable manner of administering guaiac in liquid form, so far as tried, is that of a syrup prepared as follows:

Take of Guaiac,	.	.	.	.	.	$\frac{3}{4}$ j.
Solution of Potassa,	.	.	.	.	$\frac{1}{2}$ ss.	
Sugar,	.	.	.	.	.	$\frac{3}{4}$ xiv.
Water, sufficient.						

Macerate the guaiac in the solution of potassa mixed with $\frac{3}{4}$ j. of water for two or three days; then percolate with water till eight fluid ounces of liquid are obtained, in which dissolve the sugar.

This syrup is quite pleasant to the taste, and can be taken alone or mixed with water; it has been prescribed for several years by Dr. Ludlow, of Philadelphia, with decided benefit in cases of rheumatism, and can be given for a long period without exciting disgust.

The quantity of solution of potassa may be doubled without rendering the syrup unpalatable, and thus would increase the amount of guaiac dissolved.

ON THE USE OF WAX, TALLOW, ETC., IN SUPPOSITORIES.

BY CHARLES L. EBERLE.

QUERY 29.—The fusing-point of true butter of cacao being near that of the temperature of the body, what is the influence of such additions as wax, tallow, &c., on its fusing-point, and to what extent are such additions objectionable, if at all, in vaginal or urethral suppositories?

PURE cacao-butter may be asserted to be but rarely if ever met with in the drug market. The samples for sale vary sensibly in color and consistency, and no positive rule for judging of a pure article by cursory examination can be offered. A candid admission by several prominent manufacturers of the article, reveals the fact of its frequent adulteration, and since the extended demand and sale of this production for cosmetic and suppository application, a greater variety of mixtures known as butter of cacao is to be found than formerly.

The pharmacist, however, but seldom applies it to uses other than in the preparation of suppositories, the successful use of which depends upon a base, whose point of fusion will correspond to animal heat, which can be handled readily when in form, and which upon exposure to the natural heat of the body will promptly liquefy, not melt slowly, thus depositing quickly the medicating ingredient upon the surface to which it has been exhibited.

The butter of cacao most nearly satisfactory to pharmaceutical

use, is of a dirty white, inclined to yellow in appearance, firm under pressure, yet disposed to yield its surface when held in the hand by the warmth thus imparted, fusing readily at or about 98°, which sets rapidly after fusion when exposed to cold, and which, after such exposure, maintains its original character at ordinary temperatures.

Such cacao-butter may be had. I here exhibit a specimen, and under proper manipulation it needs no addition of a hardening ingredient to adapt it to suppository use.

Cacao-butter at 98° F. liquefies. This is more apparent in the rectum or vagina than by merely holding in the hand. The mixtures, I mean the mixtures made by the pharmacist with the cacao-butter of the market, vary in their behavior in proportion to the quantity and character of the hardening ingredient used in connection with it.

A considerable proportion of cetaceum may be added without materially affecting the value of a suppository; at least ten per cent., if combined with the butter, will produce a suppository which will not be likely to be complained of by the medical profession, but the slowness with which this alloy, so to speak, fuses, makes this or the addition of any hardening substance a serious objection. We need promptness of action in the application of medicines by suppository, which can be best secured by rapid liquefaction of the excipient, and no mixture or single substance combines the essentials requisite, so completely, as a good sample of so-called cacao-butter.

The addition of wax to cacao-butter is to be reprehended. While, under restriction, a mixture may be formed which will harden more quickly and bear more handling than the butter alone, the reflecting pharmacist will bear in mind, the slowness of its fusion at animal heat, and the consequent suspension of the medicine, which should be diffused and deposited over as large a surface as possible.

Content with the simple fusion of such mixtures, the ease with which they may be manipulated, and the temptation to dispense quickly, the more important fact has been overlooked by many, who will doubtless correct the error in their future

operations. I have invariably found that when the additions were not large enough to render the use of the moulded cones inadmissible, there was no advantage gained by a combination of base or excipient.

With regard to the effect upon the animal tissues of such applications of hardened suppositories, I can only say that where they are of such a character as to produce local irritation, the uneasiness induced requires their removal; this objection is now but seldom met with. Within the past two years the education of the pharmacist has materially advanced in this direction, so that no store of repute dispenses cones that will not at least fuse at animal temperature, however slowly this fusion may occur, or however imperfectly they may medicate from the suspension of the medicine until its ejection by the action of the parts. Those having but occasional prescriptions for them, are now in the habit of depending on the larger retail establishments, who furnish the trade with a great variety.

There need be no apprehension of a local irritation arising from the use of wax, if not carried beyond the proper fusing-point. As much as fourteen per cent. is used by pharmacists of good repute, without complaint in this respect. The mixture fuses quite slowly at animal temperature, but there is no apparent dissection of the cone, whereby the wax is separated from the butter *during fusion*, however much this may be the case when the melted substances are allowed to cool *ad libitum*. There is a uniformity of constitution so long as the heat is present.

Slow manipulation with a mixture of wax and cacao-butter before hardening, we can readily understand, would cause a granulation of the wax, and produce a cone in which the heat to which it is to be subjected would act only upon the cacao-butter, to the exclusion of the wax, which would then remain unchanged, causing irritation and difficulty; but we are only supposed to be dealing with mixtures which have been well stirred to the time of their introduction into the mould, which mould has been thoroughly chilled, and the suppository likewise. Under such circumstances the mixture is uniform and perfect, and shows no

disposition to separate on fusion, if the heat be maintained at that point.

The difficulties in a proper understanding of the preparation of suppositories without the addition of a hardening ingredient in connection with cacao-butter have been solely those of manipulation.

Experience is leading many to prepare the excipient with a smaller proportion of wax, spermaceti, &c., than they at first thought necessary, until the quantity used by some is so trifling as to practically amount to little or no use.

Of the various mixtures, those of one-eighth spermaceti or one-fourteenth or less of wax are least objectionable. Tallow suet or paraffine produced no results not secured by the first-mentioned, while there were some objections to be attached to their use not present in the others.

Now while some may have discovered points of manipulation to make these suppositories of *cacao-butter alone*, rapidly and well (and how much often hangs upon a very slight thread in this respect), far exceeding in value those I am about to offer to you, I will simply state the mode which gives me the most satisfactory result.

The mould is of brass; a clamp hinged at one extremity and handled at the other, held firmly in place by a ring slipped over said handles; the cones are turned from the interior face of the clamps, as in an ordinary bullet-mould. It should mould at least one dozen, and be improved by the addition of a loose clamp, to be attached firmly in the centre and at the bottom of so long a tool, to prevent the loss of the fused mass before congealing, by running from between the plates.

This mould should, so far as possible, be kept thoroughly chilled and ready for use. To place the fused butter in the mould while it is warm and cool both, by the same operation, almost invariably results in the contraction of the metal upon the cool cone to a degree that upon the attempted separation of the matrix every cone will be split in two. When the mould is thoroughly cooled, the butter sets rapidly, and in fifteen or twenty

minutes the suppositories will drop from the matrices by their own gravity.

The deductions I draw from a close observance of this subject for the past two years are, that the addition of a substance such as wax, spermaceti, &c., to cacao-butter produces a mixture requiring a higher point of heat for its fusion, and in proportion to the amount of such addition; and that when such addition is made, if it should not be sufficient to prevent the fusing of a suppository at animal temperature, no irritating or harmful effect is produced either upon the vagina or urethra. Where a larger quantity than that mentioned above is added, the annoyance produced requires the removal or ejection of the suppository before any harm may be done.

VOLUNTEER REPORTS AND ESSAYS.

ON THE SPECIFIC GRAVITIES INDICATED BY BEAUMÉ'S HYDROMETERS.

BY DR. WILSON H. PILE, PHILADELPHIA.

IN endeavoring to frame a simple rule or formula by which the degrees of Beaumé's Hydrometer could be reduced to their corresponding specific gravities, I was led to select the following illustration in determining the relation existing between the two scales, as being thus more readily comprehended than in any other way. Having never met with similar observations by others, I have endeavored in the following paper to explain, as briefly as possible, the method by which the rules alluded to have been formed.

Without further preamble, and without going into any detail respecting the nature and principles of the hydrometer, which would be foreign to the subject, let a cylindrical tube of thin glass closed at its lower extremity be floated in water of the temperature of 60° F., dropping shot or mercury into the tube until it sinks within a short distance of the top; make a line at this point, which call the water-point; now divide the cylinder between this point and the bottom into 145 parts, and number these divisions from the water-line downwards, you will have thus formed a true Beaumé's Hydrometer for all liquids heavier than water, and although very unlike the ordinary instrument, yet its indications will be perfectly reliable, provided the tube be of equal diameter throughout.

No. 1. FOR LIQUIDS HEAVIER THAN WATER.

No. 2. FOR LIQUIDS LIGHTER THAN WATER.

		Beaum.		Beaum.		Ratio.	Specific Gravity.
Water,	145	0°					
	140	5°	145 140 = 1.0857				
	185	10°	145 185 = 1.0740		180		
	180	15°	145 180 = 1.1153			120	
	125	20°	145 125 = 1.1600				
	120	25°	145 120 = 1.2088				
	115	30°	145 115 = 1.2808		110		
	110	35°	145 110 = 3.3181				
Water,	140	10°					
	210	80°					
	205	75°					
	200	70°					
	195	65°					
	190	60°					
	185	55°					
	180	50°					
	175	45°					
	170	40°					
	165	35°					
	160	30°					
	155	25°					
	150	20°					
	145	15°					
	140	10°					
	140	0°					

SPECIFIC GRAVITIES INDICATED BY BEAUMÉ'S HYDROMETERS. 157

No. 1. FOR LIQUIDS HEAVIER THAN WATER.

No. 2. FOR LIQUIDS LIGHTER THAN WATER.

	Beaumé.	Ratio.	Specific Gravity.		Beaumé.	Ratio.	Specific Gravity.
105	40°	145	$\frac{145}{105} = 1.3809$		100		
100	45°	145	$\frac{145}{100} = 1.4500$				
95	50°	145	$\frac{145}{95} = 1.5263$		90		
90	55°	145	$\frac{145}{90} = 1.6111$				
85	60°	145	$\frac{145}{85} = 1.7068$		80		
80	65°	145	$\frac{145}{80} = 1.8125$				
75	70°	145	$\frac{145}{75} = 1.9888$		70		
70	75°						
65					60		
60							
55							
50							
45							
40							
35							
30							
25					20		
20							
15						10	
10							
5							

RULE.

$$\frac{145}{145 - B^\circ} = \text{sp. gr.}$$

$$145 - \frac{145}{\text{sp. gr.}} = \text{Beaumé.}$$

RULE.

$$\frac{140}{B^\circ + 130} = \text{sp. gr.}$$

$$\frac{140}{\text{sp. gr.}} - 130 = \text{Beaumé.}$$

A question may here arise, why divide the scale into 145 parts? This division was selected as giving a scale corresponding with the average of a number of Beaumé's hydrometers from different makers. Beaumé himself left no practical or specific directions for this purpose. In fact, an examination of these instruments will, unfortunately, exhibit very wide discrepancies, thus rendering the indications unreliable.

To remedy this evil as far as possible, Mr. Henry Pemberton, of Philadelphia, in 1851, proposed the scale as above described. This was adopted as the standard by the Philadelphia College of Pharmacy the same year, and thus was secured a uniform scale for this instrument.

You will bear in mind, that the scale we have just been considering is for liquids that are heavier than water. Now for liquids lighter than water, it would appear but natural that similar divisions should be continued upwards above the water-line. But it happens unfortunately, that from erroneous views taken by Beaumé, which need not here be discussed, the degrees for light liquids are larger than those for heavy liquids, and it was found by Mr. Pemberton, that an average of several hydrometers showed each degree to be about the $\frac{1}{15}$ th part of the scale instead of the $\frac{1}{17}$ th. To recur to our cylinder, the space below the water-line must be divided into 140 parts, and then similar divisions carried upwards as far as necessary.

All that part of the scale above the water-line will then indicate the degrees of Beaumé for liquids lighter than water.

Another unfortunate idea of Beaumé, and one which often leads to error, may here be alluded to. I refer to the numbering of the degrees for light liquids, calling the water-point in this scale, 10° instead of 0° , and from thence increasing upwards.

I will remark here, that in the French Codex, published in 1850, a modified Beaumé's scale was ordered to be used, selecting one which would be equivalent to dividing our cylinder into 144 degrees, and retaining the same divisions for liquids lighter than water, but yet continuing the original idea of calling the

water-point 10° for liquids lighter than water. Although the instrument as thus modified is undoubtedly an improvement over Beaumé's scale, yet it does not appear to have been introduced into this country. The scale of this French hydrometer will be found in the appendix to Wood & Bache's Dispensatory, together with that adopted by the College of Pharmacy of Philadelphia. To proceed with our subject, you will please remember the law of hydrostatics, "that a floating body always displaces a quantity of the liquid in which it floats, equalling in weight the total weight of the floating body itself." If, therefore, our cylinder while immersed in water, displaces 145 parts, the number of parts which it displaces in any other liquid will necessarily equal the same weight, or in other words, that number of parts of the liquid will weigh precisely as much as 145 parts of water. The density or specific gravity of the liquid will, of course, be in an inverse ratio to the number of parts displaced, and this relation holds good in whatever number of parts the cylinder is divided, and we have merely to divide the number of parts beneath the surface of the liquid into the number of parts to which it sinks in water to obtain the specific gravity of the liquid.

The diagram which I have here drawn will make this evident. No. 1 represents the cylinder, divided into 145 parts for liquids heavier than water; in the adjoining column we see these divisions as numbered in Beaumé's hydrometer; the third column gives the ratio which these degrees bear to water; and in the fourth column these fractions are reduced, showing the specific gravity. In the diagram No. 2, the cylinder up to the water-line is divided into 140 parts, and then continued upwards as high as required; opposite is the corresponding Beaumé's degrees, water being 10, next the ratio, and then the specific gravity.

We are thus enabled to see the relation existing between Beaumé's degrees and their specific gravity, and also the rule by which one scale is reduced to the other.

For example, let it be desired to know the specific gravity of

the tenth degree of Beaumé for heavy liquids; we see by the diagram that this degree is 135 parts from the bottom, and as has been shown, these 135 parts must equal in weight 145 parts of water, and, therefore, its gravity must be $\frac{135}{145}$ as great, or 1.074. Hence, the directions, subtract the given degree of Beaumé from 145, and divide the remainder into 145, the quotient will be the corresponding specific gravity; expressed algebraically, the formula is $\frac{145}{145 - B^\circ} = \text{specific gravity}$. This is for liquids heavier than water; for lighter liquids a variation of this formula is necessary on account of the water-point being called 10; the principle is, however, identical in both cases: thus, to ascertain the specific gravity of 50° Beaumé, observe that this degree is but 40 degrees above the water-line, and this added to the 140 parts below that line, makes 180 parts in all below the fiftieth degree, and this sum divided into 140 will give the required specific gravity, or 0.7777.

The formula for this is $\frac{140}{B^\circ - 10 + 140}$, or which is the same,

$$\frac{140}{B^\circ + 130} = \text{sp. gravity.}$$

The converse of these rules, or to ascertain the degree of Beaumé corresponding to any given specific gravity, is found by a simple algebraic transfer of terms, and is as follows, for heavy liquids, $145 - \frac{145}{\text{sp. gr.}} = \text{Beaumé}$, and for light liquids,

$$\frac{140}{\text{sp. gr.}} - 130 = \text{Beaumé.}$$

ON FLUID EXTRACTS AND THEIR MENSTRUAE.

BY EDWARD R. SQUIBB, M.D.

To the American Pharmaceutical Association:

In continuation of the subject of Percolation and Economy of Alcohol, annually presented to the Association for some years past, the writer offers an abstract of the results of his last year's experience, premising that he has neither the time nor inclination—as time becomes more valuable—to defend his notions, judgment, or accuracy, or even to point out many of the deductions that might be drawn from the statements made as facts.

It is not uncommon to hear observant physicians say that they do not obtain results from the fluid extracts corresponding in the proportion of minim for grain to the drug which they represent; and pharmacists who use the officinal formulas must be aware that the drugs are not entirely exhausted by the processes given. A critical inquiry into this subject, in this direction, is the chief object of this paper.

A practical way to measure the rate and extent of exhaustion by percolation has long been needed, and the want of some simple and easy plan has, perhaps more than any other obstacle, stood in the way of accurate knowledge and progress in the art of percolation. After many trials, some of which were described in previous papers, the method by specific gravity has thus far proved the most satisfactory and successful. But when applied by the hydrometer, or by the ordinary specific gravity bottle, with the necessary calculations, it is too abstruse and complicated for common usage.

It is to a more plain and simple application of the principle of specific gravity that attention is now to be directed, and the formula may be stated as follows: In percolation the density of the percolate will vary from the density of the menstruum in proportion to the extent and rate of the exhaustion. It follows from this proposition that to measure the extent and rate of exhaustion, it is only necessary to measure the extent and rate at

which the percolate varies from the menstruum at the beginning of a percolation and approaches to it at the end, absolute exhaustion being indicated by equal density—or equal weight of the same volume at the same temperature—of the menstruum and percolate. This measuring is usefully accomplished with sufficient accuracy by separating the percolate as it passes into successive portions of a pint each and weighing them. By subtracting from this the weight of a pint of the menstruum at the same temperature, a series of differences will be obtained expressing the extent and rate of exhaustion. When the exhaustion is practically completed,—it is never absolutely accomplished,—the residue is dried and weighed, and its weight subtracted from the weight of the substance as originally taken for percolation. The difference or loss in weight indicates the total amount of solid matter dissolved and removed by the menstruum. Then, as the sum of the differences in weight between equal volumes of the menstruum and percolate at the same temperature, is to the total amount of solid matter or extract dissolved out by the menstruum, so is each separate difference to the weight of solid extract in the portion of percolate which that difference represents. That is to say, the total weight or amount of solid extract being ascertained, the ratio of the differences in density is applied to it to obtain a ratio of the rate of exhaustion, and to ascertain the distribution of the total extract throughout the percolate.

This method, applied to nearly all the fluid extracts which are at present official, and to some others, has convinced the writer,

First. That the present official processes do not sufficiently exhaust the drugs to which they are applied; and,

Second. That these processes do not take the best way to attain the object. That the supposed advantage of using coarse powders is a delusion. That maceration is useless at the commencement of the process of percolation, but useful after the substance has been partially exhausted. That the menstrua are not always the best that could be selected, either for extracting the useful portions of the drug or for excluding the useless por-

TABLE OF PERCOLATIONS.

		Aconite Root.	Buchu Leaf.	Cinchona Bark.	Ergot.	Lupulin.	Sarsaparilla Root.	Senna Leaf.	Dandelion Root.	Uva Ursi Leaf.
		Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	Grains.
Pint.	Pint.	Difference	Difference	Difference	Difference	Difference	Difference	Difference	Difference	Difference
Roots of the percolate.	Roots.	Roots.	Roots.	Roots.	Roots.	Roots.	Roots.	Roots.	Roots.	Roots.
1	288	512	305	789	398	514	304	748	287	344
2	193	343	124	321	155	200	135	332	480	1549
3	118	210	67	173	70	87	121	187	604	87
4	77	137	44	114	48	62	26	64	133	429
5	57	101	27	70	53	68	21	52	77	249
6	50	89	20	52	26	34	16	39	64	207
7	36	64	20	52	28	35	13	32	39	126
8	41	73	19	49	65	84	17	42	26	84
9	44	78	18	47	95	123	14	34	23	74
10	34	61	18	47	71	92	9	22	13	42
11	31	55	12	31	40	8	19	13	42	53
12	37	66	9	22	30	39	10	25	26	68
13	29	52	1	3	26	34	10	25	57	68
14	27	48	2	39	14	18	34	24	52	62
15	22	39	2	32	41	25	32	32	49	59
16	20	36	1	25	32	25	32	32	41	50
17					38	49				
Sum Total,										
	1104	1964	684	1770	1205	1555	632	1555	1760	15681
										(12071445)
										7811992
										12262540
										15693742
										12992758

Quantity of powder percolated,
Dried residue from percolation,
Loss by percolation (solid extract),
Pharmaceutical percolate 10,
Maximum ext. obtained by Pharm.,
Percentage of total, " "
Percolate required to get 80 p. c. of
the total extract,
Extract in the pint when of 80 per cent,

tions. That glycerin is preferable to sugar where either gives any positive advantage, but that anything like a general use of glycerin in fluid extracts is to be deprecated, as the advantages are more in appearance than reality.

The foregoing table, embracing the substances of nine officinal fluid extracts, and one other, is limited in extent by the size of the page, but is large enough to illustrate these points. These percolations, excepting ergot and lupulin, were all made with fine powders, moistened with more menstruum than is directed by the Pharmacopœia, and the moistened powder put through a sieve of about twelve meshes to the inch before the packing. The packing and percolating was then done with all the care and skill which the writer's experience could suggest, so that the results are considered to be much better than an average practice would give. Each pint of percolate was weighed in a flask marked in the narrow part of the neck, and the menstruum at the same temperature was weighed in the same flask, and the difference in weight set down in the column under that heading. The same powder, managed in the same way, was percolated at once; and another portion, after macerating four days, with no practical difference in result; whilst a maceration of twenty-four hours after the third or fourth pint of percolate had passed, would always increase the difference somewhat, and would often increase them much. Changes of temperature, also, by changing the solvent power of the menstruum, caused the differences to rise and fall somewhat, coincident with changes of weather. A simple inspection of the proportion of the extract contained in the first pint of each percolate will probably expose the fallacy that any amount of expert skill and management could ever make that pint represent the whole efficacy of the drug. In percolating the powder of good aconite root by a very slow and careful percolation, the characteristic numbing impression upon the tongue was distinctly though faintly perceptible by the application of a few drops from the thirteenth pint. The bitterness of cinchona was perceptible in the seventeenth pint; but neither the taste nor odor of wild cherry bark were perceptible in the sixteenth pint,

though the amount of extract contained was large. Ergot was necessarily percolated in coarse powder (No. 60), and was easily and rapidly exhausted; but the dried residue powdered finer gave a notable proportion of extract, which, for want of time, was not determined. Not so with lupulin, however, which, percolated in its natural condition of coarse powder, left a light residue, from which no ordinary management could extract anything more. The percolation of lupulin was very regular and uniform, and maceration at any stage of the process had no perceptible effect. Effective percolations of dandelion root are very slow, and therefore very perfect; and like those of sarsaparilla, often become slower as they approach completion.

The great difference in the rate of exhaustion in the examples given in the table indicates that no general rule of limit can be adopted, but that each substance must be studied by itself. From results given in a previous paper, the solid extract obtained by percolation from some drugs, and probably from all, is not of uniform medicinal value as found in different parts of the percolate, but becomes weaker toward the end. When this ceases to be of practical value, or, in other words, where the percolation should terminate, was not determined. Among the examples given it will be seen that if the *Pharmacopœia* used fine powder and slow percolation, it would, in the case of dandelion, obtain 86 per cent. of the total extract; and it is probable that this is somewhere near or beyond the limit of practical utility. If so, it might be directed that fluid extracts as a class of preparations should not contain less than 80 per cent. of the total solid extract which the drugs were capable of yielding to the given menstruum; and the limit of percolation necessary to obtain this is shown by one of the lines of the table. But where this 80 per cent. of the solid extract has been obtained, it is not within the compass of a pint, but is contained in a number of pints, never less than $2\frac{1}{2}$ nor more than 11.

To get these various large quantities within the measure of a pint each without the use of heat, and with the least loss of menstruum, is the next and great requisite, without which they are not fluid extracts.

To accomplish this, there appears to be no choice of means. There is one way, and only one way, known to the writer by which it may be done, and that is by repercolation, or percolating fresh portions of the drug with percolate from previous portions, until the normal difference in weight between equal volumes of the menstruum and percolate is attained.

This process is somewhat complex and troublesome, and requires knowledge and skill; and, worse than all, requires that a stock of weak percolate of different densities be carried from one making to the next for each fluid extract. But, as it appears to be absolutely the only means of accomplishing the end well and properly, there is no choice between it and those means which give results too imperfect for the present state of pharmacy.

This process of repercolation has been described in previous papers, but it may be useful here to offer a table of examples, carried out to an exaggerated extent, to exhibit its scope and capacity; and yellow cinchona, dandelion, and senna are selected for illustration. All these drugs were taken in the very fine powders as met with in the markets. One Pharmacopœia portion of 7680 grains of each was taken for each percolation, and three percolations of each drug were made. The percolate from the first portion of each was taken to moisten and percolate the second, and the percolate from the second portion of each was taken to moisten and percolate the third.

The menstruum used for yellow cinchona was a mixture of one part, by weight, of glycerin, and three parts, by weight, of stronger alcohol. That used for the senna was diluted alcohol, and that used for the dandelion was a mixture of equal weights of stronger alcohol and water. The yellow cinchona and dandelion were each moistened with 8 f $\frac{3}{4}$, of menstruum and percolate, and the senna with 9 f $\frac{3}{4}$. All the moistened powders were passed through a sieve before packing, and were packed and managed alike, each pint as it came from one funnel being poured on top of the other.

TABLE OF REPERCOLATIONS.

It will be seen by reference to the first table that it is estimated that the Pharmacopœia *may* get in yellow cinchona 55 per cent. of the extract from the bark, or 866 grains in the two pints. By the last cinchona column of the table of repercolations it will be seen that if the first four pints from the third portion be mixed together, each pint of the mixture will contain almost as much extract of cinchona as the officinal two pints, and the whole four pints will make, by adding the next four pints of the column, eight pints, having nearly the strength of the officinal preparation, and this from three portions of powder.

If the fluid extract of cinchona be changed in the new Pharmacopœia to double the present officinal strength, and the standard for percolation be unchanged, then this column would yield about $2\frac{1}{2}$ pints of double the present officinal strength. But if the standard be increased so that the preparation shall contain 80 per cent. of the extract, or 1244 instead of 866 grains, then the first pint of the column is not strong enough, and another portion must be percolated with the percolate from the third portion. This portion may be larger or smaller than the others in proportion to the wants of the operator, and will yield accordingly, the larger portions being more economical.

In the case of dandelion (should not the Pharmacopœia change the English name to taraxacum?) the Pharmacopœia is estimated to get 86 per cent. or 3222 grains of the extract in its pint. This would make the first two pints of the last dandelion column nearly officinal. But if the standard be reduced to the 80 per cent. uniformity, or 2993 grains instead of 3222 to the pint, the column would yield nearly $2\frac{1}{2}$ pints of that strength.

In the case of senna, the Pharmacopœia, as estimated, may get 78 per cent. or 1972 grains of the extract in its prescribed pint of fluid extract. The last senna column of the table would yield about $2\frac{1}{2}$ pints of this strength. But if the standard be increased to 80 per cent., or 2032 grains of extract to the pint, the column would yield just 2 pints of this strength.

Of course the weaker percolates of these final columns of this table yield proportionately more when applied to other fresh portions of powder, but in some instances at least, if not in all,

repercolation cannot be carried on indefinitely, because of the weak percolate becoming overloaded with extract—the 20 per cent. which is rejected and goes on accumulating—which is assumed here to be medicinally feeble. After a year or two of active practice, it becomes necessary to recover the alcohol from the weaker of the weak percolates, only carrying on the stronger ones. In no case need each separate portion of the residuary weak percolate be kept separate from one making to the next, but the different strengths may be grouped together so as to preserve the whole in three or four bottles for each substance.

From the above considerations it would follow that a fluid extract representing a drug *minim* for grain, might be defined or described as a solution containing 80 per cent. of the extract of that drug, which is soluble in a given prescribed menstruum. And fluid extract of senna, for example, would be powdered senna repercolated with diluted alcohol until equal volumes of the menstruum and percolate weighed at the same temperature, differ to the extent of 14.5 per cent. = 988 grains to the pint.

The menstrua for fluid extracts need much revision and much research, for upon the menstruum a large part of the therapeutic as well as pharmaceutical success depends. The writer has only very imperfectly studied this branch of the subject, and yet too much time and space would be required to give an abstract of the observations made. He must therefore be content with offering his judgment as based on his experience.

The officinal "alcohol," defined as "spirit of the specific gravity 0.835," seems to be no longer needed in the Pharmacopœia, its place having been well taken by the common so-called "95 per cent. alcohol," or "alcohol fortius" of the Pharmacopœia. This might now be called in the Pharmacopœia, as it is in the market, simply alcohol. Since the last revision of the Pharmacopœia the Government has taken charge of the spirit market, and one result of legislation upon it, has been to reduce the strength of the market grades. Ten years ago it was easy to get the so-called "95 per cent. alcohol" and "cologne spirit" from any good maker, containing 92 per cent., or of the officinal specific gravity 0.817. But of late years, in the

writer's experience, this is always difficult and generally impossible. In a review of some fifty barrels or more from several good makers, including "Atwood's Alcohol," at various times within the past year, and all bought to special order, and not in the general market, the specific gravity has only once reached .817, all the others varying between .818 and .824 with an average of about .820. A ten-gallon keg bought in the common market, of a first-rate house, and with the brand of a good maker on it, stamped by the United States Revenue Officer as containing "10 wine gallons," "Proof 188," contained 8 gallons and 7 pints, yet gave no evidence of leakage, and had a specific gravity of .82058. This probably fairly represents the market at the present day, and if so, 91 rather than 92 per cent. should be aimed at by the Pharmacopœia.

Some reform in the mercantile management of alcohol is much needed, and the influence of this Association might be used to bring this about at an earlier day than it would naturally come through popular demand. When the so-called "95 per cent. alcohol" sold for 40 to 45 cents per gallon, the "shortage" of half a gallon or a gallon on each barrel was of far less moment than it is now with a price of \$2, or thereabouts; and the difference of temperature between summer and winter,—or between 10° C. = 50° F., and 30° C. = 86° F.—of a fraction over 2 per cent. in the measuring, was also of less moment. Either through erroneous gauging, or through some skill in making barrels, or through both together, it is very rare to find a barrel of alcohol that holds out measure even in summer temperatures, and the rule is that they fall short from half a gallon to one and a half gallons to the barrel, while of late years the writer never knew a barrel to overrun the gauge. And as the United States Inspector's certificate always certifies the gauge, the alcohol-maker throws himself upon this, and there is no redress. Besides this there can be nothing more clumsy, nor more difficult to comprehend in common usage, than the plan of defining the strength by degrees above and below proof, and the quantity by proof gallons. If it was desirable to keep the consumers or users of alcohol so befogged that they could not detect deficiencies in

strength or measure, hardly a better plan could be adopted, and the advisers or experts of the General Government, who are responsible for the present method, could not have better subserved the interests of the Whiskey Ring, or damaged the interests of the consumer had they been paid for it.

The strength should always be indicated by percentage of absolute alcohol *by weight* and not by volume, and this should be determined by apparent specific gravity.

It should always be bought and sold by weight, the barrels being tared, just as castor oil, linseed oil, cotton seed oil, &c., are of late years.

Five gallons alcohol, specific gravity .8202 at 15.6° C. = 60° F., measured at 21° C. = 69.8° F., weighs 34 lbs. avoirdupois, or nearly 6 lbs. 13 oz. to the gallon. This alcohol contains about 91 per cent. by weight of absolute alcohol.

The officinal alcohol fortius, specific gravity .817, containing about 92 per cent. of alcohol by weight, if measured at 15.6° C. = 60° F., weighs just about the same. So that about 5.4° C. = 9.8° F. of temperature, is equal to 1 per cent. in strength.

If bought and sold by weight, or by weight gallons, which would be the first step, temperature would not have to be taken into consideration.

Alcohol of specific gravity .81674 at 15.6° C. = 60° F., when weighed at 25° C. = 77° F., has an *apparent* specific gravity of .808767, and at 30.6° C. = 87° F., .80400, or about .00085 for each Centigrade degree of temperature. By apparent specific gravity is meant that although the alcohol is weighed at the higher temperature given, it is compared with the same volume of water at the lower temperature of 15.6° C. = 60° F.

One pint of this alcohol, officinal "alcohol fortius,"

at 10.6° C. = 51° F. weighs 387.72 gram. = 5983 grains.

at 30.6° C. = 87° F.	379.87	"	= 5862	"
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20° C. = 68° F.	7.85	"	= 121	"
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Alcohol of specific gravity .82154 at 15.6° C. = 60° F. when weighed at 25° C. = 77° F. has an *apparent* specific gravity of .81342, and at 30.6° C. = 87° F., .80889, or about .000843

for each Centigrade degree of temperature. One pint of this alcohol, which is about the common commercial strength,

at 15.6° C. = 60° F. weighs 388.05 gram. = 5988 grains.

at 25.6° C. = 78° F. 384.15 " = 5928 "

10° C. = 18° F.	3.90	"	=	60	"
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The next alcoholic menstruum which the writer has found necessary thus far, is a mixture of equal parts, by weight, of stronger alcohol and water. This mixture rejects much more of the troublesome mucilaginous portions of such drugs as dandelion than the diluted alcohol does.

Equal weights of alcohol specific gravity .81953 at 15.6° C. = 60° F., and water, give a mixture having a specific gravity

at 15.6° C. = 60° F. .92858

at 25° = 77° F. .92003. Difference, .00089 for ea.

1° C.

One pint of this mixture

at 10.6° C. = 51° F. weighs 439.93 gram. = 6789 grains.

at 30.6° C. = 87° F. " 433.03 " = 6682 "

20° C. = 36° F.	6.9	"	=	107	"
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Diluted alcohol, as at present officinal, consists of equal measures, at 60° F., of alcohol of specific gravity .835 and distilled water, and has a specific gravity

at 15.6° C. = 60° F. .94118.

at 25.2° C. = 77° + F. .93438.

This, when made from alcohol s. g. .81674 at 15.6° C.,

requires 100 measures of the alcohol at 15.6° C. to

112.54 " " distilled water at 15.6° C., or

100 " " " " 15.6° C.

require 88.85 " " the alcohol at 15.6° C.

Made by weight,

100 parts of the alcohol require 136.86 distilled water,
or 100 " distilled water " 73.06 alcohol.

100 " alcohol, s.g. .835, " 119.84 distilled water,
or 100 " distilled water " 83.44 alcohol, .835.

One pint of this diluted alcohol

at 10.6° C. = 51° F. weighs 446.30 gram.	= 6887 grains.
at 30.6° C. = 87° F. " 439.69 "	= 6785 "
<u>20° C. = 36° F.</u>	<u>6.61 " = 102 "</u>

Made with alcohol s. g. .8208 at 15.6° C. = 60° F.,

100 parts alcohol require 135 parts distilled water,
and the s. g. of the mixture

at 15.6° C. = 60° F. is .941849.
at 25° C. = 77° F. is .935422, or .000684 for ea. 1° C.

One pint of this mixture

at 10.6° C. = 51° F. weighs 446.50 gram.	= 6890 grains.
at 30.6° C. = 87° F. " 439.75 "	= 6786 "
<u>20° C. = 36° F.</u>	<u>6.75 " = 104 "</u>

A mixture of three parts, by weight, of stronger alcohol, and one part glycerin, proves to be a very good menstruum for cinchona and rhubarb, and may be found applicable to other drugs.

Made with alcohol of s. g. .81674 at 15.6° C.

and glycerin " 1.2523 at 15.6° C.,

the mixture has a specific gravity

at 15.6° C. = 60° F. .90050.

at 25° C. = 77° F. .89296, or .000802 for ea. 1° C.

One pint of this mixture

at 10.6° C. = 51° F. weighs 427.30 gram.	= 6594 grains.
at 30.6° C. = 87° F. " 419.82 "	= 6479 "
<u>20° C. = 36° F.</u>	<u>7.48 " = 115 "</u>

The other special menstruum thus far studied by the writer is one that has been found well adapted to wild cherry bark, pareira brava, and uva ursi. This is a mixture of two parts stronger alcohol, three parts glycerin, and five parts water. By measure this is very nearly two measures each of the alcohol and glycerin, and four of water.

Made from alcohol of s. g. .81953 at 15.6° C., and glycerin s. g. 1.2523 at 15.6° C., it has a s. g.

at 15.6° C. = 60° F. 1.03883,

at 25° C. = 77° F. 1.03283, or nearly .0006 for ea. 1° C.

One pint of this mixture

at 10.6° C. = 51° F. weighs 492.03 gram. = 7593 grains.

at 30.6° C. = 87° F. " 486.97 " = 7514 "

20° C. = 36° F.	5.06 " = 79 "
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It appears very probable that special menstrua for special drugs can and should be very much multiplied. Indeed, it may be regarded as almost certain that a proper degree of research would show that every drug requires a special menstruum in order to secure the best results. If there be a rule of any general applicability, it is that for drugs which contain definite alkaloids, the menstruum should be as strongly alcoholic as possible; a rule which is in opposition to former practice.

It remains now to notice the prominent fluid extracts with which the writer has had most experience, in detail.

FLUID EXTRACT OF ACONITE ROOT.

Not officinal, but should be, and should always bear a red label. The root should be in very fine powder, and the menstruum stronger alcohol. The officinal quantity of powder requires 5 fluid ounces for moistening, and the moistened powder should be passed through a sieve before packing. A pint of the menstruum at 25° C. = 77° F., weighs about 5907 grains, and a pint of the finished preparation, at the same temperature, should weigh about 6350 grains, giving a difference of about 440 grains, varying somewhat with the quality of the root and the dryness of the powder.

FLUID EXTRACT OF BELLADONNA ROOT.

Not officinal, but should be, as stronger and more uniform than that yielded by the leaf. The two are not necessary, and if the leaf was dropped, the root would soon go into general use. The fluid extract should always bear a red label.

The root should be in very fine powder, and the menstruum stronger alcohol.

FLUID EXTRACT OF BUCHU, OFFICINAL.

The leaf should be green and fresh, the short buchu the best, and be in very fine powder. Many menstrua tried, with various portions of glycerin and water, but none so good as stronger alcohol. About 8 f $\frac{3}{4}$ required to moisten the powder, which should be passed through a sieve before packing. A pint of the menstruum weighs about 5907 grains, and a pint of the finished preparation about 6677 grains, giving a difference of about 770 grains.

FLUID EXTRACT OF CIMICIFUGA, OFFICINAL.

The root being in very fine powder, the officinal plan yields an excellent preparation by repercolation. The process could, however, be much simplified.

FLUID EXTRACT OF CINCHONA, OFFICINAL.

The bark should be in very fine powder, the menstruum one part glycerin and three parts alcohol, and 8 f $\frac{3}{4}$ should be used to moisten the powder before sifting. Many menstrua were tried with this drug, but none seemed to answer so well as the mixture indicated. With it a fluid extract was prepared of which a minim represented about one and a half grains, and this has now stood more than four months without a deposit. Therefore, a preparation of one minim to the grain, or double the present officinal strength, would probably stand indefinitely, and this change of strength is, in the writer's judgment, very desirable. The details of this percolation are given in the Tables. In the management of this drug the weak percolates become overloaded with extract from time to time, but the alcohol can be easily recovered from them without much damage, as the glycerin takes care of the alkaloids and bitter principles.

The writer has found no demand for fluid extract of colchicum root, and believes it to be a useless preparation, while that of the seed is so commonly used, and a more uniform preparation.

FLUID EXTRACT OF CONIUM SEED, NOT OFFICINAL.

But should be. One hundred pounds of green unripe fruit or seed, yield about thirty-five pounds of dried unripe fruit, which when properly dried retain their green color. The best fluid extract of this very tender and sensitive drug, is made by crushing the fresh unripe seed with a small proportion of stronger alcohol slightly acidulated with hydrochloric acid, and pressing out the liquid by a powerful press, and evaporating, without heat, by inclosing it over lime, until three pounds of the fresh unripe fruit is represented by one pint of the preparation.

An excellent preparation may also be made from the dried unripe fruit in fine powder, by repercolation with stronger alcohol slightly acidulated with hydrochloric acid.

FLUID EXTRACT OF ERGOT, OFFICINAL.

Ergot cannot be obtained in fine powder without material injury. It should be had in as fine a powder as practicable without drying, and this grinding should be done at the time when it is to be percolated. Skilfully repercolated with diluted alcohol acidulated with one per cent. of acetic acid, the preparation appears unexceptionable. A pint of the menstruum, at 25° C. = 77° F., weighs about 6824 grains, and a pint of the finished preparation weighs about 7224 grains, giving a difference of about 400 grains.

FLUID EXTRACT OF IPECACUANHA, OFFICINAL.

This preparation is very much in need of special study and research, the present formula being troublesome and uncertain in regard to the precipitation of the resin, and yielding a preparation not uniform in appearance and properties.

FLUID EXTRACT OF PAREIRA BRAVA, NOT OFFICINAL.

But should be. This drug from its density is a refractory substance to percolate. It should be in the finest possible powder, and be percolated very slowly with the mixture of alcohol, glycerin, and water.

FLUID EXTRACT OF WILD CHERRY BARK, OFFICINAL.

This is, perhaps, the most troublesome of the officinal formulas, and requires more knowledge and skill than repercolation does. If the menstruum be watery enough, and contain but little alcohol, the reaction between the constituents of the bark for the production of hydrocyanic acid and oil of bitter almonds takes place during the maceration, and thus saves the circuitous route by emulsion of almonds. The mixture of alcohol, glycerin, and water is well adapted to this percolation, and yields a preparation having much more of the sensible properties of the drug than the officinal process. It should also be made double the present officinal strength.

A pint of the menstruum weighs about 7540 grains at mean temperatures, and a pint of the preparation of full strength about 8290 grains, giving a difference of about 750 grains. Or, for the present officinal half strength, the weight of a pint would be about 7915 grains, with a difference of about 375 grains.

The hydrocyanic acid and oil of bitter almonds of this preparation seem to suffer spontaneous decomposition, as the proportion, always very small, appears to diminish somewhat rapidly. As the physician often needs these sedative constituents they should be added at the time of prescribing.

FLUID EXTRACT OF RHUBARB, OFFICINAL.

The rhubarb should be in very fine powder, and be repercolated with the mixture of one part glycerin and three parts stronger alcohol. Many menstrua were tried with this drug, but none seemed to do as well as that indicated. A pint of the menstruum weighs about 6828 grains, and a pint of the finished preparation about 7328 grains, giving a difference of about 500 grains.

FLUID EXTRACT OF SARSAPARILLA, AND COMPOUND FLUID EXTRACT OF SARSAPARILLA, BOTH OFFICINAL.

Should be in fine powder, and be repercolated with diluted alcohol, and glycerin added to the weak residuary percolate in such amount as to constitute one-fourth the weight of the finished

preparation. This should then be reduced to the proper extent by distillation, and the glycerin residue be added to the strong percolate.

The mezereon of the compound fluid extract is often complained of, and probably might be omitted without injury.

FLUID EXTRACT OF SENNA, OFFICINAL.

This preparation, made by the officinal process, is often complained of for want of purgative strength. In order to try the effect of stronger alcohol as a menstruum for senna, a portion was completely exhausted by the use of 18 pints of the alcohol. The residue was dried, and when taken by the writer in doses of 180 to 200 grains, proved purgative, and produced griping. Other portions were exhausted by weaker alcohol, and the residue tried in the same way, but the purgative power did not disappear entirely until the alcohol was reduced by the addition of half its volume of water. It appears, therefore, that the officinal diluted alcohol, as now used, or that which is a little stronger, as made by mixing equal weights of stronger alcohol and water, are one or the other proper for the repercolation of senna. The diluted alcohol has been tried and does well, but whether the other would be better has not been tried. The addition of glycerin, even in small proportion, overloads the preparation with mucilaginous extractive matter.

FLUID EXTRACT OF DANDELION, OFFICINAL.

The German bitter root is much preferred by the writer, and it should be in very fine powder. The officinal diluted alcohol, as now directed, dissolves an unnecessary proportion of the mucilaginous ingredients of the drug, and clogs the percolations. A mixture of equal weights of stronger alcohol and water answers better, and yields a good preparation.

FLUID EXTRACT OF UVA URSSI, OFFICINAL.

Should be simply repercolated in very fine powder by the mixture of alcohol, glycerin, and water. This menstruum seems well adapted to this drug.

FLUID EXTRACT OF VALERIAN, OFFICINAL.

Various mixtures of glycerin were tried for percolating this drug, but without success, nothing answering so well as stronger alcohol. English valerian yields a preparation of milder taste, and finer and more delicate odor. But the German or French drug, which gives a peppery impression to the tongue, is doubtless the more effective medicinal agent.

FLUID EXTRACT OF AMERICAN HELLEBORE, OFFICINAL.

This should be repercolated in very fine powder with stronger alcohol, and should always bear a red label.

FLUID EXTRACT OF GINGER, OFFICINAL.

This should be made from African ginger in very fine powder, and not from Jamaica ginger. The latter has a finer aromatic flavor, but the former is the stronger carminative. The menstruum should be stronger alcohol.

The difficulty and labor in making good fluid extracts has recently led to a proposition, chiefly advocated among the pharmacists of Chicago, to reduce the strength of these preparations by one-half, or to the present strength of the fluid extracts of cinchona and wild cherry-bark. Although there are some good reasons for this proposition, yet in the writer's opinion it would not be a wise change. The popularity of these medicines, as a class, depends largely upon the convenience which they offer to country physicians of carrying their remedies in a small compass, and in a convenient form; and to give this and many other advantages up at this late day, after many of the difficulties and deficiencies have been discovered and remedied, would be to sacrifice much useful labor with the recognized advantages. Beside, one of the most useful of the directions in which progress in pharmacy is recognized, is in the concentration and condensation of medicinal agents.

One direction in which several of the fluid extracts might be improved, is by the addition of corrigents. Fluid extracts of cinchona and senna should have aromatics in full proportion.

added, and there should be a fluid extract of May-apple with belladonna or hyoscyamus, and aromatics.

BROOKLYN, September, 1870.

NOTE ON RHUBARB.

BY EDWARD R. SQUIBB, M.D.

To the American Pharmaceutical Association:

THE New York market has been well supplied with good rhubarb at moderate prices throughout the year, and the prominent houses have rarely been without packages of very fine quality, whilst the poorer grades have been in the usual abundance. Buyers of every quality, from the finest to the poorest have, therefore, found no difficulty in supplying themselves throughout the year, and the quality of the better grades has steadily advanced, with prices remaining moderate.

The better grades still reach the market a little damp, and deficient in aromatic properties, thus affording continued evidence of haste in drying and packing. But entire cases are now reaching the market with scarcely a really bad piece in a case. This best quality is generally well peeled, and the surfaces often in the natural condition, or not artificially colored at all, nor with the appearance of being washed. These better grades are, however, still of very dull sale, and yield poorer profits than the lower grades. It is not uncommon to see the cases of lower grade disappear and change around one of these finer lots until the importer gets tired of seeing it and quoting its price; and then concessions in the already very moderate price in order "to close out the lot," afford that temptation to buyers which the quality failed to excite. For powdering, the lower grades are still in popular demand, and the buyer who would look to the higher grades to send to the mill, would be an unnatural curiosity. A good proportion of the higher grades which are sold, are still believed to be submitted to the process

of Turkeyfication; that is, made so to imitate old-fashioned Turkey and Russian rhubarb, that it may serve to keep up the supply of that "little more that is still left of the old kind," which brings exorbitant prices from the confiding consumer. These "confidence games" of the trade stand much in need of the police influences of this Association.

Two cases or chests of rhubarb are herewith presented as illustrating the better grades of the market during the past year. One chest is of small generally round pieces, and the other of larger flatter pieces. The first was imported by Messrs. Dodge & Olcott, of whom it was bought at \$2, gold, per pound. Being paid for with gold at \$1.16 $\frac{5}{8}$, the net cost was about \$2.33 currency. In about a month it had lost about 3 per cent. by drying, although not spread out at all, and will probably lose as much more within the next month, particularly, if it be powdered. Every piece in this chest has been bored for inspection, and although a small proportion of the pieces are darker, and a few are discolored toward the centre, not one really unsound piece has been met with, and, while a large proportion of it is well fitted for the nicest tonic and stomachic uses of rhubarb in the root, the remainder is equally well fitted without much garbling, for all the less delicate uses to which powdered rhubarb is applied,—even to the delicate stomachs of young children. It is less aromatic than it should be, but on the whole is almost unexceptionable, and will improve by age if secured from the attacks of insects, as may be done by suspending an open vial of chloroform in the receptacle for it. The net prime cost, without addition for labor or other expense, is only about \$2.50, or in powder \$2.65.

The second chest of flatter pieces was sent to the writer, on special order, by Messrs. Arthur S. Hill & Son, of London. The order to purchase the best that the market would afford, without limit of any kind, was in their hands two or three months, and they are believed to be experts, with a good knowledge of their market. This chest may, therefore, be regarded as representing the condition of the London market for high grades.

This rhubarb is drier than the first chest, and perhaps a little better in its general quality; but as it is but recently arrived and not yet thoroughly examined, it may fail to confirm this judgment. A small proportion of the pieces on top have been bored, and no really unsound pieces have been met with. The borings are more uniform in color, and of a rather brighter color, and drier than those of the first chest, and are more aromatic, though not so strong in odor. The invoice cost of this was five shillings and nine pence, sterling, per pound, which, with freight, duty, and other expenses, makes the net prime cost here, just about the same as that of the first chest, or about \$2.33 currency. This, however, will not lose so much as the other by drying—probably not more than half as much, so that, with estimated loss, labor, &c., added, the ultimate cost will be probably 5 or 6 cents per pound less.

The two chests are, however, so nearly alike, and so good, and at such moderate price, as to leave nothing to be desired in regard to quality and cost in rhubarb to those who choose to exercise the necessary care in buying, since, even in small quantities, this grade can be bought at \$3.25 per pound.

After the 1st of January next the duty of 50 cents per pound in gold, ceases, and as the market stock, in anticipation of this event, will be small, a corresponding reduction in price may be expected soon after. With such rhubarb as this is, at about \$1.75 to \$2.00 per pound, there should be but little temptation to deal in the lower grades.

BROOKLYN, September, 1870.

ON SOME MEDICINAL PLANTS OF CANADIAN GROWTH.

BY W. SAUNDERS, LONDON, ONTARIO.

HAVING become somewhat debilitated by close application to business, I purchased two years since a farm, with the intention of planting it with fruits of various sorts, and growing as well

such varieties of foreign and indigenous medicinal plants as should be found suitable to the soil and climate. The personal supervision requisite to begin and carry out successfully an undertaking of this sort would, I knew, oblige me to be away much from the shop, and exchange its closer atmosphere and sedentary occupations for the more active employments and purer air of the country. I believe, as a class, we pharmacists are fond of our profession, and there are charms as well as ties about it which seem to draw one naturally into long hours of steady application, and it requires a considerable effort to break away from these influences, and unless one is obliged to do so, good resolutions are often set aside to suit occasion and convenience. My undertaking may not, at present, be regarded as a paying one; but there will surely be a large sum to place to the credit side on account of improved health and increasing vigor, more than sufficient, I think, to balance any losses which may arise, and in this way at least I can recommend it to my fellow pharmacists as a profitable enterprise.

This being the second season only for the new business, it is impossible to present any very full or complete details as to the success and profits attending the growth of the various medicinal articles, for besides the time being too short the seasons have both been very unfavorable. We have had such excessive rains that the ground has been almost saturated with water during a great part of the growing period; still I hope that the few results I am able to communicate will not prove uninteresting.

The first and one of the greatest difficulties was the procuring of suitable seeds, fresh and good; there is so little demand for such that they are sometimes old and almost worthless before they come into the purchaser's hands, so that very few of them will germinate. Some of the needed articles were found among the seed dealers of New York and Boston, others were obtained from the establishment of Vilmorin, Paris, France.

ATROPA BELLADONNA.

Two ounces of seed was planted, late in May, in drills $2\frac{1}{2}$ feet apart, and covering 1-16th of an acre of ground, with the inten-

tion of transplanting it into rows, at suitable distances, the following season. The plants came up moderately thick, and attained a fair growth before the close of the summer; in one or two instances flowers appeared on them late in September. The outer leaves were partially stripped before severe frost came, carefully leaving the crowns uninjured. The product yielded 11 lbs., when dry. Thinking that the plants were sufficiently vigorous and well established to withstand the cold of winter, they were not in any way protected. The season proved too severe for them, the following spring showing every plant dead, with its roots quite rotten.

From the herb gathered in the fall some preparations were made—fluid extract and solid extracts, watery and alcoholic. On comparison with similar preparations from like quantities, and made with equal care from a fair sample of the imported herb, the following results were noted:

1 lb. of herb of Canadian growth yielded of solid aqueous extract, 2 oz. 7 drs. 28 grs.	1 lb. of imported herb yielded of solid aqueous extract, 3 oz. 5 drs. 10 grs.
Solid alcoholic extract, 1 oz. 5 drs. 25 grs.	Solid alcoholic extract, 2 oz. 2 drs. 80 grs.

Showing a difference of yield in favor of the imported herb of 5 drachms 47 grains aqueous extract, and 5 drachms and 5 grains alcoholic extract.

The fluid extract made from the herb of Canadian growth has the narcotic odor of the plant in a higher degree than that from the imported herb; the odor is so strong in the former case that it approaches pungency. It has been used in a few cases in practice, and as far as I have been able to ascertain, has acted fully as well as that made from the foreign plant.

The solid aqueous extracts closely resemble each other in odor, although I am inclined to regard that from the Canadian plant as strongest.

The alcoholic extracts differ in odor very materially; that from the herb of Canadian growth is much heavier and more powerful than the other. I have had no opportunity of having these latter articles tested in medical practice.

HYOSCYAMUS NIGER.

One ounce of seed in this instance was planted at the same time and in the same manner as that of the Belladonna, occupying a space of less than 1-20th of an acre. The plants came up thin, a large proportion of the seeds failing to germinate. Ten pounds of leaves were gathered about the 1st of October. Some of the plants belonged to the annual variety, others to the biennial; most of the latter, in this instance, stood the winter well and sprouted out vigorously on the opening of spring, but requiring to use the land where they were established for other purposes they were transplanted. The place selected for their removal was rather low, and the wet season proved very unfavorable for their establishment; hence during the summer the larger part of the plants died; the few survivors were left for seed.

This plant has become naturalized, and is now growing wild in many parts of Canada, so that there is little doubt but that its culture, if desirable, might be made successful. A series of preparations have been made, in this case, similar to those made from belladonna, with results as follows:

1 lb. of herb of Canadian growth yielded of solid aqueous extract, 2 oz. 6 drs. 4 grs.	1 lb. of imported herb yielded of solid aqueous extract, 8 oz. 4 drs. 44 grs.
Solid alcoholic extract, 1 oz. 8 drs.	Solid alcoholic extract, 2 oz. 2 drs. 50 grs.

Showing a difference of yield also in favor of the imported herb of 6 drachms 40 grains aqueous extract, and 7 drachms 50 grains alcoholic extract.

The odor of the fluid extracts seems exactly alike; that from the aqueous extracts is also similar, although the advantage seems to rest with the Canadian article; while the alcoholic extracts again differ materially, the foreign article having the weaker odor.

The culture of *Digitalis Purpurea* has not been attended with much success. A good quantity (2 oz.) of seed has been sown; but either the seed has been worthless, or it has been sown too deep, so that very few plants have appeared. Some of those-

grown last year survived the winter without protection, but many of them died. Seed sown this year has also come up very sparingly.

Dill was tried last season without success; the plants grew well and flowered, but the season proved too short for the seed to mature. Besides, it was almost destroyed by the attacks of a small caterpillar, which affects nearly all the umbelliferous plants with us. It is the progeny of a pretty little moth called *Depressaria Ontariella*. This little creature feeds on the unopened flowers, drawing the various portions of the umbel together with threads of silk, soon disfiguring and destroying them. Had the seed ripened, three-fourths of the crop would probably have been lost from this cause.

Fenugreek was also tried. It came up very thick, and did well; its peculiar odor perfumed the air for some distance around the patch during the latter part of the season, but the seeds, which formed well in their long pods, did not ripen sufficiently to be of any value. Better success attended the growth of Coriander and Caraway. One-eighth of an acre of Coriander, with half a pound of seed, yielded 110 lbs.; and one-fifteenth of an acre of Caraway, with half a pound of seed, 106 lbs., the Corianders maturing their seed the same season that they were planted; the Caraways not maturing till the second year.

Many other of the common herbs have been successfully grown, including Wormwood, Sage, Hyssop, Thyme, Rue, Horehound, Rosemary, Summer Savory, Poke-root, and Elecampane. Seeds of Leptandra and Glycyrrhiza germinated well, but the growth of both has been weak.

A quarter of a pound of Dandelion seed has been sown this season on about three-fourths of an acre of ground. The plants have made very good growth, the roots having already attained about half an inch or more in diameter, and will probably acquire size sufficient to give a profitable yield before the close of the season.

The following includes most of the complete failures, that is, when the seed did not germinate at all: *Arnica montana*, *Vernonia album*, *Gentiana lutea*, *Aconitum Napellus*, *Angelica*,

Solanum Dulcamara, Colchicum autumnale, Bryonia alba, and Polygala Senega.

GLYCERINE; ITS QUALITY AS IT EXISTS IN COMMERCE.

BY JOSEPH P. REMINGTON, PHILADELPHIA, PA.

THIS powerful solvent and useful medicine, though but lately called from its seclusion in the cabinet in answer to the demands of this progressive age, has rapidly ingratiated itself into the esteem of the chemist, pharmacist, and the public at large.

It continues to widen its sphere of usefulness ; we hear of new applications constantly ; and its *bland manners* and *insinuating disposition* have won for it a host of friends, and an ever-increasing popularity.

It serves its mission as faithfully on the dressing-table of a lady as it does in our gas meters ; as well as an excipient for pill masses as it does a substitute for molasses in printers' rollers, and its range of applications between these extremes is varied and extensive.

Its production, with a view to improve the quality and lower the price, has been attended with success, as we all know. A glycerine which will answer almost every purpose (except for internal administration), can be procured for twenty-five cents per pound ; and one fit for any purpose for sixty cents per pound.

One of the principal reasons for bringing this matter before you, is to detail a comparative examination of the different brands in the market, which examination was at first undertaken for the writer's own satisfaction, but which may prove not uninteresting to the Association. Each glycerine was tested by the same reagent, in the same relative quantity, at the same time ; and the effect carefully noted.

The glycerines, as they stood in their commercial attire before the examination, presented quite a contrast ; the most pretentious was one of the latest comers into the market, De Haen's;

BRANDS.	For Strength. Sp. Gr.	Color.	Odor when warm.	Nitrate of Silver.	Sulphuric Acid.	For Sulphate of Lime.
Bower's Pure,	1.253	None.	None.	No precipitate.	Slightly dis- colored.	No precipitate.
Gordon's Pure,	1.240	Yellowish.	Fatty.	Heavy white precipitate.	Discolored.	No precipitate.
Concentrated,	1.250	"	Slight.	Rose color.	Discolored.	No precipitate.
Sarg's Chemically Pure,	1.254	None.	Empyreumati- cally.	No precipitate.	Discolored:	No precipitate.
Sarg's second quality,	1.250	Quite dark.	Like glue.	White precipi- tate.	Slightly dis- colored.	No precipitate.
De Haen's Chemically Pure,	1.245	None.	Slight.	Rose color.	Discolored.	No precipitate.

BRANDS.	For Lime Salts Or Ammon.	Ferro-cyanide of Iron.	Hydrosulph. of Ammon.	Chloride of Barium.	For Ethyl-Buty- rate.	For Sugar.
Bower's Pure,	No precipitate.	Opalescence.	No precipitate.	No precipitate.	Slight odor.	Free from sugar.
Gordon's Pure,	Slight precipi- tate.	Clear.	No precipitate.	Slight precipi- tate.	Strong odor.	Free from sugar.
Concentrated,	No precipitate.	Opalescence.	No precipitate.	Precipitate.	Slight odor.	Free from sugar.
Sarg's Chemically Pure,	No precipitate.	Precipitate.	No precipitate.	No precipitate.	Very slight odor.	Free from sugar.
Sarg's second quality,	White precipi- tate.	Slight precipi- tate.	No precipitate.	Opalescent.	Slight odor.	Free from sugar.
De Haen,	No precipitate.	No precipitate.	No precipitate.	Slight precipi- tate.	Slight odor.	Free from sugar.

which from the size of the bottle would lead to the supposition that it contained more than a pound. This glycerine has attracted attention by reason of the free use of adjectives on the label, and on account of a vigorous attack on the propriety of using the adjectives, by the editor of a trade journal.

Sarg's Pure Glycerine is put up in a very attractive style, the blue stencilled label and the refractive property of the glycerine contrast to very good advantage.

The American glycerines were in a plainer and neater dress, Bower's, Gordon's, and Concentrated, being put up in the usual glycerine bottle with a plain label.

The result will be found in the foregoing table.

ON A CASE OF POISONING BY ACONITE.

BY SAMUEL P. DUFFIELD, PH.D., M.D.,

Professor of Toxicology in Detroit Medical College.

ON the 14th December I was called upon by Coroner Daly to investigate the contents of a vial, one teaspoonful of which had been taken as a dose by the deceased, and which had proved fatal in from two to three hours.

As this was a mistake upon the part of the druggist, I will give as succinctly as possible the circumstances of the case, merely suppressing the name of the druggist for reasons which will be obvious to the members of this Association.

The young man was an employee on the Michigan Central Railroad, and had been using a prescription containing fluid extract of ergot and tincture of chloride of iron for some genito-urinary difficulty, and had used the preparation several weeks, and urged his father, on his way to the Michigan Central depot, to have the prescription renewed. The father, as he brought the young man's dinner, stopped at the store and had it renewed. Immediately on reaching the young man's place of work, he gave him the bottle, of which he took one teaspoonful.

In the space of a few minutes he complained of intense heat in the stomach, constriction of the throat, and said he was poisoned, and went with his father to his home. His physician, the one who had prescribed the medicine,—and as he was cold and in the first stage of poisoning from what after appeared, he judged the young man was suffering from a chill,—in the mean time sent word to the apothecary, and the medicine, interrogating him if the medicine had been put up right. It is said the apothecary tasted it, and said it was "All right;" the young man, the patient, all the while insisting upon the fact that he was poisoned.

Shortly after the return of the messenger the young man was attacked with terribly severe convulsions, and after several attacks he died.

The vial was handed me by the coroner, and below is my report. The Association will pardon the length of it, but it has a very strong moral in it, which, I trust, will be of use to many of the members of our valued Society.

REPORT TO CORONER CAHILL.

DEAR SIR: In accordance with instructions received, I have analyzed the contents of the vial given me by yourself, on the evening of December 14th, a short time after eight o'clock.

The vial was what is termed an ounce prescription, and contained one-half fluidounce of dark spirituous liquid. The label on said vial read as follows:

Pres. No. 3021. Book 20. Dec. 8, 1869.

Prescribed by Dr. Leach.

Sig. A teaspoonful in a wineglassful of water three times a day.

Prepared by &c., &c.

On the next morning, in order to do justice to the apothecary, I applied to him for the privilege of taking from his book a copy of the prescription. As the proprietor was out, the assistant, after inquiring the number of the prescription and the book,

which I read him from the fatal bottle, kindly placed the book at my disposal, and I took in pencil a copy. It read as follows:

B.—Fluid extract ergot, 3v.

Tinct. iron, 3ij.

A teaspoonful in a wineglassful of water three times a day.—LEACH.

After purchasing at R. W. King's glass store a new glass graduate, and at P. & W. Fischer's one-half dozen new watch-glasses, in which to make my alkaloidal tests, I proceeded to the laboratory of the Detroit Medical College, and instituted the analysis.

I first tested the prescription for what it should contain, had it been prepared correctly. I found tincture of iron, but did not find any ergot. I then made up a prescription from acetic fluid extract of ergot and tincture of iron in the proportion of the prescription, and subjected it to the same tests. This last prescription gave abundant evidence of the presence of ergot.

Ergot was, therefore, absent in the suspected vial, and it now became my duty to detect, if possible, what had been substituted for it.

I first noticed its physical properties, viz.: Has a strong alcoholic odor. The liquid taken out on a glass rod and held near a flame takes fire, showing it belongs to the class of fluid extracts which are made with stronger alcohol.

Having been a manufacturer for the past twelve years, and being familiar with the odor of fluid extracts, I suspected this belonged to the class containing an alkaloid. Its physical properties pointed to either veratrum or aconite; and in order, while pursuing the chemical investigation, to distinguish which of these two it was, I moistened the sensitive skin of my upper lip, and allowed it to dry, taking care not to swallow any saliva or drink any liquid during the time of the experiment. In about twenty minutes a peculiar sensation pervaded that portion of the lip upon which the liquid had been rubbed, a tingling and a numbness, with a sense of pressure, which continued for three hours, and then gradually faded away. This was the effect of aco-

nitine or veratrine, but veratria in alcoholic solution would not have been as dark as this was.

All the reactions of aconitiae being the same in general with the other alkaloids, we are able only to detect it positively by its physiological action. I therefore adopted and carried out the following course of procedure:

Two fluid drachms of prescription 3026 (the suspected fluid) were measured into the perfectly clean glass graduate, and then transferred into a new eight-ounce flask; and after being rendered plainly alkaline by potassa solution, thoroughly shaken with two ounces of chemically pure chloroform. After the chloroform had subsided, it was drawn off, and another fresh portion of chloroform added and shaken in like manner, and after subsidence drawn off and mixed with the first portion of chloroform drawn off. This chloroform was allowed to evaporate to a small bulk, about a drachm, and then transferred to a large watch-glass, and allowed to evaporate spontaneously. On evaporation, it left the mass you behold in the watch-glasses. Weight of glass and residue, $84\frac{8}{100}$ grains.

The residue, which afterwards proved to be the impure alkaloid, was dissolved in chloroform, and transferred to another glass. The first glass then weighed $84\frac{26}{100}$ grains; deducting this from the first weight, $\frac{617}{100}$ grains, or six hundred and seventeen one thousandths of a grain, somewhat more than $\frac{1}{2}$ a grain of impure aconitine.

About the twentieth ($\frac{1}{20}$) of a grain was dissolved in chloroform, and by means of a hypodermic syringe injected on the margin of the lip of a large rabbit procured for the purpose, and four drops injected under the skin of the fore leg.

TIME.—Twenty minutes of five o'clock P.M., gave the hypodermic injections. Fifteen minutes after five spasms of the muscles set in about the neck, and the saliva ran freely from the mouth. He now began to experience difficulty in moving his hind legs, and in fifty minutes from the time the poison was introduced, he fell over in strong convulsions, and remained convulsed three minutes. He then turned upon his side, and lay motionless. At this stage of the action of the poison you could

feel the heart still beating. The body was cold, and ever and anon the spasms of the muscles of the neck would draw the head back. In the interim the ears trembled violently, and he was no longer able to use the hind feet, having become paralyzed from the action of the poison. Toward the close he had a succession of spasms, foam at the mouth, until just before death the pupil of the eyes dilated enormously, and after death contracted.

Sixty-five minutes from the time of administering the hypodermic injection on the lip he was dead. He had taken about one-twentieth of a grain of the impure aconitum, and this was equivalent to twelve drops of the mixture. But as the alkaloid was not absolutely pure, but containing resin, it would be safer to say the two fluid drachms put up in this prescription contained one-half grain of pure aconitum. Therefore, one teaspoonful contained one-quarter or one-fifth of a grain of this formidable poison; and this amount young Lauderkin had undoubtedly taken, and this proved the cause of his death.

I am, therefore, in view of this investigation which I have been ordered to make, compelled to depose,

1st. The liquid handed me did not contain any fluid extract of ergot.

2d. It did contain muriated tincture of iron.

3d. It contained fluid extract of aconite, which was the poisonous ingredient occupying the place of the fluid extract of ergot.

SAMUEL P. DUFFIELD.

DETROIT, December 16, 1869.

I would call the attention of the Association to the fact that the young man who made the mistake *insisted* he made no mistake; and when the prescription was handed to the pharmacist himself, he said, after tasting it, that it was all right.

Had the pharmacist even at that hour recognized he had made a mistake, an antidote might have been administered, and the young man been saved. Druggists should never try to cover up such deficiency by a denial. In this case it was death; where,

had a mistake been recognized, it might have been otherwise. The young man who made the fatal error has since, I believe, pursued a course of pharmacy in Philadelphia, and I trust has been made a more careful man.

I have advised one course to be adopted in all drug stores, viz., have a series of small cupboards each with a Yale lock. Each cupboard for only one poison, such as strychnine; one for aconitia and all its preparations. We all know that the key of one Yale lock will not unlock another; and having the name engraved upon the key, a person could not get morphine with a strychnine key. Prof. Maisch will understand this, and can explain. The idea is to guard as much as possible against the fallibility of human thought. But, better than all, a thorough course in pharmacy and medicine are requisite. We want a higher grade than we have in our state, at least at present.

I regret I cannot be with you.

Yours, &c.,

SAMUEL P. DUFFIELD.

PHARMACY IN THE SOUTHERN STATES.

BY JAMES M. CALDWELL, PHILADELPHIA, PA.

I HAVE the honor to submit to the American Pharmaceutical Association, the subjoined analysis of its roll of membership for the year 1869-70, with a few suggestions which may prove of interest, and merit the consideration of its members:

Alabama,	4	Kentucky,	15
California,	13	Louisiana,	4
Colorado,	1	Maine,	9
Columbia, District,	19	Maryland,	48
Connecticut,	8	Massachusetts,	105
Delaware,	7	Michigan,	88
Florida,	1	Minnesota,	3
Georgia,	5	Mississippi,	2
Illinois,	75	Missouri,	80
Indiana,	14	Nevada,	2
Iowa,	2	New Hampshire,	9
Kansas,	8	New Jersey,	25

New Mexico,	1	Tennessee,	6
New York,	148	Vermont,	8
North Carolina,	8	Virginia,	2
Ohio,	56	Washington Territory,	1
Oregon,	1	Wisconsin,	7
Pennsylvania,	143	Dominion of Canada,	10
Rhode Island,	6	West Indies,	1
South Carolina,	2	U. S. of Colombia,	1

Honorary Members, 15.

This summary gives us a total of eight hundred and forty-three honorary and active members. Included in this number we have in the city of

Baltimore,	46	members.
Chicago,	59	"
Boston,	65	"
New York,	94	"
Philadelphia,	114	"

Giving us in these five named cities three hundred and seventy-eight members, or nearly one-half our total number. This may strike many minds as a singular fact, but one which is easily accounted for, when we consider that these five cities represent over two millions of the entire population of the United States. My attention, however, has been drawn to a more remarkable fact; one which, to some degree, has induced me to present this communication to the Association, and one which I deem worthy of the earnest and earliest consideration of its members.

In nine of our Southern States, we enrol but twenty-nine members, as follows:

Alabama,	4	North Carolina,	8
Florida,	1	South Carolina,	2
Georgia,	5	Tennessee,	6
Louisiana,	4	Virginia,	2
Mississippi,	2		

I have ascertained from various sources, that in these same nine states, are to be found about nine hundred and ninety-eight regular drug stores, as follows:

Alabama,	95	North Carolina,	93
Florida,	20	South Carolina,	89
Georgia,	127	Tennessee,	163
Louisiana,	96	Virginia,	186
Mississippi,	129		

For sake of convenience we will presume there are one thousand drug stores, and if we average but two persons to each store, we shall then have but twenty-nine members out of two thousand druggists. It will be noticed here, that the states of Kentucky, Arkansas, and Texas, are not enumerated in this statement.

Now the question arises, why has this Association so small a representation in these Southern States? It is true, the ruthless hand of war has passed over this section of our land, and, to some extent, created an unsettled condition of affairs, and tended to retard the progress of science; but this fact is not to be accepted as a solution of our problem.

Prior to the war the names of many Southern pharmacists appeared upon our roll, and to some of the older members of the Association, many names are familiar and cherished for their valuable contributions upon scientific subjects. Some of these have passed from the scenes of earth, while others have removed to other portions of our country.

Having been engaged in the drug business for several years in different portions of the South, it was my privilege to form the acquaintance of many of its prominent physicians and pharmacists. In nearly all the larger Southern cities are to be found well-regulated and neatly-arranged drug stores, and in the cities of Richmond, Augusta, Charleston, and Savannah, are to be found pharmacies which will compare favorably with many of our elegant Northern establishments. From personal observation, it gives me pleasure, in this connection, to remark, that the proprietors and assistants of these pharmacies (with but few exceptions) are jealous of their profession, and endeavor as far as possible to keep pace with the rapid strides of pharmaceutical advancement.

Now, in view of these facts, is it not the duty of this Association to endeavor to enrol a larger number of Southern members? Is it not proper for us to extend the privileges and influences of this Association over this section of our land?

Every student of *materia medica* is familiar with the fact, that many of our most valuable remedial agents are the products of Southern latitudes; and in many of our Southern States are to be found valuable plants whose medical virtues are comparatively

unknown and unappreciated, simply for want of proper investigation. Why should these gifts of nature and nature's God be thus neglected? Why should not those whose lot it is to be residents of this sunny clime, where the rarest flowers bloom in all their beauty, and distil their delightful fragrance all the year round, be induced to engage in this great work and duty of scientific investigation? Why should not auxiliary pharmaceutical associations be organized, colleges of pharmacy established, and the cause of pharmacy advanced in all sections of our country?

Now, in view of these facts, I would suggest the propriety and practicability of the Association holding its annual meetings alternately North and South. It is a fact worthy of notice, that in nearly every city where our Association has convened, we have received large additions to our membership; and I believe that if our members were to convene in some one of our Southern towns or cities, that the first step toward an enrolment of Southern members would be attained.

At the last Annual Meeting of the Association a proposition to meet in the city of Richmond, Va., was discussed; and I earnestly hope that our members may decide at its next annual meeting to convene, in 1871, in that city, so famous for its recent historic events, as well as the beauty of its situation. So far as the sanitary condition of these cities is concerned, the city of Richmond, in the month of September, is as healthy as the cities of Philadelphia or New York, and there is but little risk in meeting in the cities of Charleston or Savannah at the same period named, as these cities have been remarkably free from epidemic fevers for many years; and if some members are fearful of meeting in the fall in these cities of the extreme South, the difficulty can, no doubt, be obviated by meeting in the month of May.

Our Association is a National one in its name and character; every member ought to be an "active principle," and we should all labor to elevate the standard of our profession in every section of our rapidly growing country. I trust that these humble suggestions may be received with favor by the members of our Association.

PHARMACY IN CALIFORNIA.

BY WILLIAM T. WENZELL.

DURING the earlier period of California's golden era, dating from the first influx of the prospectors for the precious metal up to within ten years, the state of pharmacy was during that time in a rather crude state. Scientific pursuits and elevation of professional standard was then a subject unthought of, and it rarely, if ever, received the attention of the pioneer, whose only aim and object was to amass wealth with the greatest possible speed, and having successfully accomplished it, to return to his home, and there enjoy in peace the fruits of his labor. But few of the pioneer apothecaries, however, have realized the dream of their vivid imagination when first they entered the Golden Gate, and beheld the magnificent bay in all its grandeur introducing them into a country, having the most fertile of soils, the most genial of climes, blessed with perennial spring; most of those, I say, failed to realize their expectations. The great number of those who were successful in establishing a fair and remunerative business, in their great anxiety to amass wealth with greater rapidity, were lured on by visions of mines of fabulous wealth into the vortex of reckless investments and speculations as wild as the result proved ultimately ruinous. It is in California at the present day a common occurrence to meet with men of ability, who were once proprietors of drug stores doing a lucrative business, and are now acting as assistants to those whom they formerly employed. It is asserted, that there are a greater number of professional men running loose in California and adjoining states than elsewhere, many of whom have graduated with the highest collegiate honors, and are now following the precarious existence of a miner or ordinary laborer; having failed in making their "pile," pride forbade their making known their destitute condition, preferring to do the most menial of labor to becoming an object of charity and commiseration. With this condition of things it was impossible to collect and enlist the co-operation of suitable material for the purpose of an early organization.

One attempt, however, was made twelve years ago. On February 10th, 1858, an association was organized, styled the "San Francisco Pharmaceutical Society." It was started with a goodly number of prominent and influential druggists and pharmaceutists, and it gave promise of a combination, which might well raise its voice from the then far-distant shores of the Pacific, and demand a respectful hearing from the craft, co-laborers for the same end on the eastern coast. But the society did not long outlive its formation. Like an abnormal conception, its birth proved premature. By reason also of petty jealousies, self-aggrandizement, and minor bickerings, which must always prove inimical to the harmonious action of societies, the foundation upon which the superstructure of pharmaceutical advancement was to be reared became weakened, and the attendance of members became less after each consecutive meeting. If anything was accomplished for the benefit of science or the progress of pharmacy, the result has never transpired, and the society after a few meetings naturally died of inanition. Years have elapsed since that effort was made for the establishment of a society which, had it proved successful at that period, would have done much towards enlarging the sphere of usefulness of our profession on the Pacific coast, and also by discountenancing petty jealousies and infusing a spirit of honorable competition within the ranks of its members, to effect a union professional and social in its character. But we must leave the ruins of the fated temple, for a new structure arisen, erected, we trust, upon a solid foundation, and of material ever durable, a temple dedicated to the "Progress of Pharmacy."

The Pharmaceutical Society of California was organized on the second Monday of last October, and judging from its healthy growth and the activity of its members, a permanent Californian institution is now inaugurated, which, we hope, will prove an honor to its members, the state, and the country. About a hundred and twenty-five members have enrolled their names upon its pages, many of whom are residents of the interior of the state, and several of Oregon, Nevada, and Washington Territory. We have engaged able professors to deliver courses

of lectures in Chemistry and *Materia Medica*, and at the next annual meeting, to be held on the second Monday of next month, the organization and incorporation of a College of Pharmacy is to be earnestly discussed. From the position and prospects of San Francisco as being the great metropolis of the Pacific coast, an institution of this kind will soon become imperative, therefore, this step seems a move in the right direction, and we fondly hope that these our wishes and expectations may be crowned in due time with success. The Pacific slope, with its anomalous fauna and flora, and also its great varieties of mineral wealth, presents an inexhaustible field for the intelligent investigator. There is no doubt but that California will furnish our *Materia Medica* with new and valuable remedies. The attention of the pharmacist is also directed to the climate and soil of California, as being peculiarly well adapted for the cultivation of a great variety of medicinal plants in their greatest state of perfection.

The state of pharmacy in California being as yet to some degree primitive, the sale and use of poisons have generally been carried on indiscriminately, no restrictions having been placed against their abuse by our statutory or civic laws. Last winter a move was made to introduce a law prohibiting druggists and apothecaries from selling poison without a written prescription from a physician. This law failing in its provisions in defining the pharmaceutist as being the proper custodian of poisons, the operation of such a law would virtually transfer almost the entire sale of poison without restrictions to ordinary shopkeepers, a measure altogether too obnoxious to the interests of the pharmaceutists, and injurious to the public at large. Its passage was strenuously opposed on the part of the Pharmaceutical Society, who desired to substitute in its place a modification of the newly proposed law, accepted on the part of the American Pharmaceutical Association, entitled, "A law for the regulation of the practice of pharmacy and the sale of poisons." There are a few pharmaceutists who voluntarily keep a registry of poisons sold, giving the date, name of purchaser, quantity of poison sold, and the purposes for which it is said to be required.

There seems to be now a decided expression on the part of the majority of our pharmaceutists to favor the introduction of a law, which in its operation does not conflict with their interests, and is at the same time effectual in protecting the people from the evils arising from an unrestricted sale of poison.

The subject of percentage on prescriptions, exacted by physicians from apothecaries, has also received our attention.

In conclusion, let me urge upon you to cultivate not only a love for our noble profession, but also a kind and considerate feeling towards one another. May harmony of action and mutual dependency in this our sphere of usefulness characterize our efforts. May the Atlantic and the Pacific join hands and raise a shout from their respective shores, the reverberations of which shall echo and re-echo through the cañoned wilds of the Rocky Mountains and the deep gorges of the Sierra Nevada. Eureka!

REPORTS OF COMMITTEES.

REPORT ON THE PROGRESS OF PHARMACY.

THE arrangement of scientific matter adopted in former years for the customary report on Pharmacy, has served as a guide for the present one.

It is divided into several parts, with the following headings :

1. Pharmacy : apparatus ; processes ; pharmaceutical compounds.
2. Pharmaceutical chemistry : chemistry of inorganic bodies ; non-metallic ; metallic elements ; chemistry of organic bodies.
3. Pharmacognosy : drugs derived from the vegetable kingdom ; drugs derived from the animal kingdom.
4. Toxicology and its bearings on forensic analysis.
5. Obituary.
6. Pharmaceutical literature.

In presenting this report, I am fully aware of its deficiency as an outline of the numerous publications relating to pharmacy and its collateral branches.

A report on pharmacy should be a comprehensive reproduction of scientific researches, and a true picture of practical efforts made within a given period. Unfortunately, my health has been so poor during the last year, that all efforts in making this report were to a great extent paralyzed, and my labor not as successful as I intended it should be.

The learned gentleman, who performed the same task before me, in presenting last year's report, very correctly remarked: "That the sciences, and consequently the scientific material, have grown in volume and value, and that it is questionable whether, at present, the knowledge, the faculties, and the labor

of one person, upon whom the fulfilment of practical business duties depends, may be regarded as sufficient to reproduce the vast material of pharmaceutical literature in a condensed form within a specified time."

In attempting to master the material of last year, I am compelled to admit the correctness of his remark.

From thousands of points, rivulets of scientific information are springing up, meeting on their way others; with these they unite, or compel them by their superior motion to change the original course. Occasionally they expand their beds, and seem to be lost in wider areas of water, till at once they emerge from apparent indolence, and taking up their course with renewed vigor, rush over every obstacle till they reach the mighty sea of general knowledge, paying there a due tribute by contributing their drops of precious liquid. The individual who, in the midst of this ocean of knowledge, is called upon to describe the course of these numerous streams tributary thereto, and to note every leap they make in passing over rapids, bewildered by the beauties and grandeurs which strike his eye, is unable to fully accomplish the duty assigned him.

The past twelve months have ushered into existence many scientific discoveries and facts of the highest importance.

The application of spectral analysis to pharmacy, by W. W. Stoddart, is one of those events, which, although yet in their infancy, promise to become especially important; an apparatus of simple construction has been invented by Dr. Phipson, which bids fair to be of great service to the apothecary.

One of the most important items in the province of inorganic chemistry is, unquestionably, Graham's discovery of the metallic character assumed by hydrogen under certain conditions. His discovery is corroborated by the observation that other metals besides palladium are capable of absorbing the hydrogen.

Efforts have been made to prepare oxygen with economy in large quantities for industrial purposes, and I venture to say that if successful, they will revolutionize thousands of industrial enterprises.

The discovery of sulphur in several parts of our vast territory

will, in the course of time, facilitate the manufacture and cheapen the price of sulphuric acid, the importance of which cannot be too highly appreciated.

The province of organic chemistry has also been enriched by numerous brilliant discoveries. Liebreich's successful discovery of the anæsthetic action of chloral is more highly estimated from day to day. Not less important is Liebig's memoir on fermentation, which throws new light upon this process.

O. Hesse, in pursuing his studies on opium, succeeded in discovering a number of highly interesting alkaloids.

Valuable contributions to the scientific treasury are the investigations of Schmidt on cubebs, the researches of Crum-Brown and Frazer on the effects of substitution compounds in which hydrogen is replaced by alcohol radicals.

In submitting this report, I thank the Association for the honor bestowed on me by appointing me to this Committee.

Very respectfully,

F. MAHLA, PH. D.,

Chairman of the Committee on the
Progress of Pharmacy.

CHICAGO, Sept. 1st, 1870.

PHARMACY.

APPARATUS.

Apparatus for preparing nitrous oxide gas.—J. T. Porter describes an apparatus suitable for the preparation of this gas, and publishes a wood-cut of the same. *Pharmac. Journal and Trans.*, Aug., 1869.

A new plaster-spreading apparatus has been constructed by J. H. Spencer, Southwark Bridge Road, London, and is described in the *Lond. Pharm. Jour.*, of July, 1869, by William Martindale. *Am. Jour. Ph.*, Sept., 1869.

An apparatus for corking a large number of bottles, is described by Heyer, in *Dingler's Polyt. Jour.*, Aug., 1869.

An apparatus for the preparation of aqua chlorinata, has been described by D. Rieckher, *N. Jahrb. f. Ph.*, July, 1869.

A. B. Prescott describes an apparatus for boiling and evaporating under diminished atmospherical pressure. Chem. N. A. R., Jan., 1870, 14.

Ice machine.—Carre's apparatus for making ice, is described in the March number of the Am. J. of Ph., 1870, p. 102, by W. Procter, Jr.

A plaster-spreading machine has also been devised by S. v. Glasenapp, and is described in the Pharm. C. Halle, Dec., 1869, 51.

A new kind of burette is described in the February number of the Chem. N. A. R., 1870, page 98.

A new arrangement for washing precipitates with hot or cold water, has been devised by H. W. Vaughan, and is described in the March number of the Ch. N. A. R., 1870, 177.

A regulator for the production in chemical laboratories of constant temperatures, by means of coal gas, is described in Dingl. Polyt. Jour., May, 1870, 312.

PROCESSES.

To prevent the bumping of boiling liquids.—Hugo Mueller recommends to introduce through the cork in the tubulus of the retort, a glass tube which is drawn out to a long capillary tube, and pressed tightly to the bottom of the retort. The upper end of the glass tube is connected by means of an India-rubber tube, with a generator of carbonic acid or hydrogen, or a gas-holder containing air, and whilst the distillation is going on, one of these gases is passed in a slow, but continuous current, through the liquid. Under these conditions all bumping is avoided, and the distillation proceeds with the utmost facility. Ch. N. A. R., p. 157.

Theo. Schumann suggests that Hugo Mueller's mode to prevent the bumping of liquids is not applicable in all cases, especially when operating with acids or kindred substances. He proposes, therefore, to simply introduce through the tubulus of the retort, a glass tube which is closed at its upper, and open at its lower end, and long enough to reach from the bottom of

the retort almost to the stopper of the tubulus. The upper end is bent into the form of a little hook, for the purpose of convenience in introducing it into the retort. Schumann affirms that this simple contrivance accomplishes fully the desired object in view. Am. J. of Ph., Nov., 1869.

Spectral Analysis.—H. Köhler describes a very simple apparatus (designed by Dr. Phipson) by means of which the absorption spectra of numerous substances can be observed. He also calls attention to the fact, noticed by various observers, that the absorption phenomena vary with the same substance if differently treated by chemical reagents. Arch. d. Pharm., Feb., 1870, 147-160.

Spectral Analysis applied to Pharmacy.—W. W. Stoddart shows in an elaborate essay how spectral analysis may be applied in practical pharmacy, and gives the absorption spectra of numerous pharmaceutical preparations. Pharmac. Jour. and Transactions, Sept., 1869, 132.

Filtration under Pressure.—G. Hinrichs describes a mode devised by Professor R. Bunsen, by which the process of filtration is greatly accelerated. Am. Jour. of Ph., Sept., 1869, from Chicago Pharmacist, July, 1869.

Bleaching of Drying Fatty Oils.—Mulder recommends as most preferable means for bleaching fatty oils, to filter them through animal charcoal, and to expose them subsequently to the influence of direct sunlight. Wittstein's Vierteljahresschrift, B. 18, 452.

Method of Preserving Drugs perfectly Dry.—M. A. Melsens suggests for this purpose to place into the shop drawers which must be filled with tight covers, shallow sheet-iron trays with a cover of metallic gauze, and to fill these latter with fused carbonate of potassa. Am. J. of Ph., May, 1870, page 253.

PHARMACEUTICAL COMPOUNDS.

ETHEREA. (ETHER-CONTAINING PREPARATIONS.)

Collodium Tannatum.—This preparation, said to possess increased haemostatic effects, is made as follows: Collodion 100, carbolic acid 10, tannin 5, benzoic acid 3 parts. Am. Journ. of Ph., Sept., 1869, from Schweitzer. Wochenschr., 1869.

Ozonic Ether.—This preparation is an ethereal solution of peroxide of hydrogen, which has been used with great advantage for the purification of the air in sick-rooms. Zeitschr. d. allg. öester. Apotheker Ver.

FLUID EXTRACTS.

Methods for the Preparation of Fluid Extracts.—There is no doubt but that in the preparation of fluid extracts the most important part of the process, viz., maceration, is often more or less neglected. S. Campbell suggests therefore to macerate for a longer period, and thinks that an addition of glycerin would be greatly instrumental in the production of reliable preparations. He describes his *modus operandi* as follows: For the preparation of alcoholic fluid extracts, I use alcohol containing one-fourth glycerin; for all others I prepare a mixture of one-half alcohol, one-fourth water, and one-fourth glycerin. With this menstruum I dampen the moderately coarse powder (obtained by passing the material through a sieve of forty meshes to the linear inch), pack it into a suitable percolator, the lower orifice being temporarily closed with a cork, and pour on the remainder of menstruum in the proportion of sixteen fluid ounces for every sixteen troy ounces of drug. I cover the percolator so as to prevent evaporation, and allow to macerate for four days; after that time I remove the cork, and use a displacing liquid of either strong or dilute alcohol or water, corresponding to the menstruum employed (omitting the glycerin); when sixteen fluid ounces have passed through, the drug will be found perfectly exhausted. Am. J. of Pharm., Sept., 1869, p. 387.

E. H. Sargent proposes to change the officinal formulæ of fluid

extracts in such a manner that every fluid ounce corresponds to one-half troy ounce of raw material. Chic. Pharm., May, 1870.

GELATINE, MEDICATED.

Prof. Almen, of Upsala, suggests to dispense violently acting substances in the form of gelatine tablettes. He proceeds for this preparation as follows: About 6 grammes best glue are dissolved in 230 cubic cent. water, in which the medicament is either dissolved or suspended. A small quantity of glycerin is added, and the whole poured upon a glass plate 6 inches wide and 12.5 inches long. The liquid is prevented from running off the plate by glass strips, which are cemented with wax to the former. This medicated glue is carefully desiccated, and finally cut up into a number of divisions, each of which represents the desired dose of the medicament. N. Jahrb. f. Ph., Aug., 1869, 66.

MEDICATED WATERS.

Aqua Picis.—Magnus Lahens in preparing tar-water admixes washed sand to the tar and agitates this mixture with water. N. Rep. f. Ph., p. 440, 1869, from Gaz. Méd. de Paris.

OINTMENTS.

Ointment for Hæmorrhoids.—Prof. Procter gives the following as the formula for this preparation, which has been used by the late Prof. W. R. Fisher:

Take of Sulphate of Morphia,	. . . . .	8 grains.
Extract of Stramonium,	. . . . .	30 "
Olive Oil,	. . . . .	60 "
Carbonate of Lead,	. . . . .	60 "
Lard Cerate,	. . . . .	3 drachms.

From which make an ointment. Am. J. of Pharm., 391, Sept., 1869.

Unguentum Hydrarg. ox. rubr.—A formula for an ointment which will not change its color on being kept, is given in the Am. J. of Pharm., July 1870, 303.

PILLS.

Thomas S. Wiegand recommends as excipients for pill-masses

1. Clear honey evaporated to about one-half its bulk; 2. Extract of gentian; 3. Glycerine mixed with one-twenty-fifth part of its weight of finely dusted white tragacanth gum. Am. J. of Ph., May, 1870, 196.

As an excipient for pills the use of plasma has been suggested. Am. J. of Ph., May, 1870, 208.

SOAPs.

Sapo Desinficiens Phenylatus.—The following formula is contained in Hager's Pharm. Centr. H., 1869, 36: Take fresh prepared and still warm cocoanut soap, 150 parts; carbolic acid, 6 parts; oil lemon, 1 part; dry caustic potassa, 2 parts; stronger alcohol, 10 parts. Mix and form in moulds.

SPIRITS.

Spiritus Formicarum.—The N. Jahrb. f. Pharm. proposes the following formula for this compound: Acid. formic. conc., $\frac{1}{2}$ ounce; dil. alcohol (spec. grav. 0.90), 1 pound. Hager's Manual directs: Acid. formic. (containing 25 per cent. anhydrous acid), 4 parts; æth. acet., $\frac{1}{2}$ part; alcohol, spec. grav. 0.835, alcohol spec. grav. 0.900, each 8 parts. Am. J. Pharm., Sept., 1869.

SUPPOSITORIES.

Hillaret recommends the following mixture for suppositories against piles: Cacao-butter, 9 grammes; iodoform, 1 gramme. This quantity is intended for one suppositorium. N. J. f. Ph., 1869, 440 from J. de Ph. et de Ch.

Samuel P. Wright found that the best mode for dispensing suppositories with dispatch, is to first place the butter of cacao where it will slowly melt, reserving a portion with which the medicaments to be incorporated are triturated. This well-mixed mass should be thoroughly incorporated by constant stirring with the melted butter of cacao, which, at the time of admixture, should not be much above 100° F. Am. J. of Ph., May, 1870, 199.

Wax-paper moulds for making suppositories are suggested by H. Koch, in Am. J. of Ph., July, 1870, 296.

SYRUPS.

Syrupus Ferri Oxydati.—Directions for the preparation of this syrup are given in N. Jahrb. f. Ph., July, 1869.

Syrup of Orange Flowers.—J. B. Moore proposes the following formula for making this syrup. Orange flower water (filtered) 1 pint; white sugar, in coarse powder, 32 ounces; dissolve by shaking and strain through muslin. Am. J. of Ph., May, 1870, 194.

Syrup of Senega.—To produce a more stable preparation it has been suggested to percolate the root with sufficient water, and to heat the obtained aqueous fluid to boiling, whereby the albuminous principles are coagulated, and may be separated by filtration. The requisite amount of sugar is then dissolved in the filtered liquor, when a permanently clear syrup is produced. Am. J. of Ph., May, 1870, 203.

J. B. Moore suggests to extract a moderately fine powder of senega, with diluted alcohol, to evaporate the tincture over the water-bath to a small volume, or until all the alcohol is driven off, and to dissolve the sugar in the remaining liquid after it has been properly filtered. Am. Journ. of Ph., May, 1870, 230.

An addition of glycerine to syrups is strongly advocated by J. B. Moore, who thinks that it will have the tendency to keep and prevent them from fermentation. Am. J. of Ph., March, 1870, 127.

Frothy Soda Water Syrups.—White of eggs in the proportion of one white to one and a half gallons cold syrup is recommended as being sufficient to produce a persistent foam. Am. J. Ph., May, 1870, 209.

Vandevyvere mentions the following reactions by means of which genuine fruit syrups can be distinguished from such which are artificially colored with aniline red:

	<i>Chlorine.</i>	<i>Muriatic, Sulphuric, and Nitric Acid.</i>	<i>Caustic Potassa.</i>
Genuine syrups.	Bleached.	Color becomes bright or red.	Causes a dirty green color.
Artificial " "	Bleached under formation of a flocculent precipitate similar to freshly pre- cipitated oxide of iron.	Color changes to yel- low orange.	Destroys color.

	Carbonate of Potassa.	Subacetate of Lead.
Genuine syrups.	Produces a green color.	Produces a greenish deposit.
Artificial " "	Does not act upon.	Produces a red deposit.
Viertelj. Schr. f. Ph., 1870, 284.		

TINCTURES.

Tinctura Rhei Dulcis.—Prof. W. Procter, Jr., publishes the following formula for its preparation:

Take of Rhubarb, coarsely powdered,	eight troy ounces.	
Liquorice Root, "	three "	
Aniseed, "	three "	
Orange Peel, "	one "	
Cardamom Seed, "	four drachms.	

Mix the powder and extract by percolation with diluted alcohol until a gallon of tincture is obtained. Am. J. of Pharm., 388, Sept., 1869.

Tinctura Kino Composita.—The following formula has been offered by the same author:

Take of Opium, in powder,	two drachms.	
Kino, "	two "	
Cochineal, "	two "	
Camphor, "	three "	
Cloves, "	three "	
Diluted Alcohol, two pints, or q. s.,		
to prepare a quart of tincture.		Ibidem.

Tinctura Opii Camphorata.—J. C. Wheaton publishes a formula for paregoric, in which laudanum is substituted in due proportion for the requisite quantity of opium. He also suggests an addition of carbonate of magnesia as "essential to produce a clear and elegant preparation."

It is to be feared, however, that this addition will impair the efficacy of the paregoric, because magnesia precipitates the morphia from an aqueous solution, and it would have to be demonstrated that the alcohol contained in paregoric is sufficiently strong to hold the morphia in solution. Am. J. of Ph., Sept., 1869.

MISCELLANEOUS ARTICLES.

Sponge-tents.—J. B. Hough uses absolute or strong alcohol for "setting" a piece of sponge into any desired shape, and

recommends this method for the preparation of sponge-tents, tampons, &c. Am. Jour. of Ph., Sept., 1869, from Cin. Lan. and Ob., July, 1869.

Paste, which will keep for a year without fermentation, is made in the following manner: Dissolve an ounce of alum in a quart of water, warmed; when cold add as much flour as will give it the consistence of cream; then strew into it as much powdered rosin as will lie on a shilling, and two or three cloves, ground. Dental Cosmos, Dec., 1869, from Chemist and Druggist.

Glycerine Soap.—Heeren gives the following directions for its preparation: Take 100 parts of oleine of commerce, add 314 parts of glycerine of 1.12 specific gravity; heat to 50 degrees, and then add 56 parts of an aqueous solution of caustic potassa (specific gravity 1.34), and stir the mixture well. This soap exhibits the consistency of honey, in which state it remains. Chem. N. A. R., Dec., 1869, 388.

Brown Hair Dye.—George McDonald publishes in the May number of the Am. Jour. of Ph., 1870, page 227, the following recipe for a hair dye, in which the ingredients, sulphur and sugar of lead, are both in a state of solution. His directions are as follows: Take acetate of lead, 2 drachms; hyposulphite of soda, 1 ounce; rose or other perfumed water, 14 ounces; glycerine, 2 fluid ounces. Dissolve the acetate of lead and hypo-sulphite of soda in separate portions of the perfumed water, filter separately, mix the solutions, and add the glycerine.

Varnish for Iron.—M. Weisskopf gives the following method for producing upon iron a durable black shining varnish: Take oil of turpentine, add to it, drop by drop, and while stirring, strong sulphuric acid, until a syrupy precipitate is quite formed, and no more of it is produced on further addition of acid. The liquid is now repeatedly washed with water until it is fully devoid of acidity. The precipitate is then brought on a cloth filter, and after all the water has run off, the syrupy mass is fit for use. If too thick, it may be diluted with oil of turpentine. Immediately after painting the iron the paint is burnt in by a gentle heat, and, after cooling, the surface is rubbed over with a piece of woollen stuff dipped in linseed oil. The author asserts

that this varnish is chemically combined with the metal, and hence does not wear or peel off as other paints do. Dental Cosmos, Dec., 1869, 672, from Ch. News.

Remedy for Carious Teeth.—Nitric ether and sulphate of alumina, mixed in proportion to make a paste, when applied to the cavity of a tooth, are said to relieve the most violent tooth-ache. Am. Jour. of Ph., Sept., 1869.

New Cement.—W. Riemann manufactures a new cement, with magnesia as principal ingredient. His recipe is as follows: Burnt and finely-powdered magnesia is mixed with an appropriate quantity of amorphous silicic acid. This powder is made into a paste with a moderately strong solution of chloride of magnesium. The mixture hardens after six hours, and forms a solid mass of great plasticity and durability. Dingl. Polyt. Jour., Jan., 1870, 93.

Iodated milk is prepared according to the following formula: Best cow's milk, 90 grammes, slightly warmed, is mixed gradually with a solution of 1 gramme of iodine, in 10 grammes alcohol, with which it is agitated until the white color of the milk reappears. A small dessert-spoonful of this preparation contains about 5 centigrammes iodine, which is said to be so intimately combined that it cannot be detected by the taste, smell, or color. Am. Jour. Ph., Sept., 1869, from exchanges.

Granular Citrate of Magnesia.—H. C. Archibald publishes a formula for the preparation of this article in the May number of the Am. Jour. of Ph., 1870, page 231.

Liq. Plumb. Subacet.—Hennig suggests for the preparation of this compound the following method: Sugar of lead, litharge and water, in the proportions indicated by the Pharmacopœia, are introduced into a suitable vessel, and frequently agitated. After twenty-four hours this mixture may be filtered, and will now answer all the requirements indicated by the Pharmacopœia. Pharm. Cent. Halle, 1869, 162.

Indestructible Black Ink.—C. Puscher gives the following directions for its preparation: 1 drachm aniline black is triturated with 60 drops concentrated muriatic acid and 6 drachms

alcohol. The so obtained mixture is diluted with a hot solution of $1\frac{1}{2}$ drachms gum arabic, in 6 ounces of water. This ink cannot be destroyed, neither by mineral acids nor by alkalies. Zeitschr. d. a. *Estr. Apoth. Ver.* 7, No. 12.

PROPRIETARY OR SECRET MEDICINES.

Darby's Prophylactic Fluid.—John Darby & Co. publish the proportion of dry constituents contained in their fluid. This preparation is in the opinion of Prof. Procter nothing else but a solution of hypochlorite potassa, parallel with the liquor sod. chlor. of the British Pharmacopœa, mixed with permanganate of potassa and borax. Am. J. of Ph., Sept., 1869.

Chlorodyne.—Edward Smith submitted chlorodyne to a chemical investigation, and publishes as result of his labors the following formula for its preparation: Rx. chloroform, fl. drachms 4; morph. mur., gr. 20; æth. rect., fl. drachms 2; oil peppermint, m. 8; dil. hydroc. acid, fl. drachms 4; tinct. capsic., fl. drachms 6; mist. acac., fl. ounce 1; theriac, q. s. to make the whole measure 4 fl. ounces. Ph. Jour. Lond., from Am. J. of Ph., May, 1870, 266.

Cinchoquinine is an article put into the market purporting to be manufactured by Jas. R. Nichols & Co. It has been analyzed by W. T. Wenzell, who arrived at the following conclusions: that cinchoquinine does not contain quinia, quinidia, and cinchonidia, as claimed by the above-mentioned firm, and that it is in reality only cinchonia containing about 2 per cent. of quinidia and cinchonidia. Am. J. of Ph., July, 1870, 343, from Pacific Med. and Surg. Jour., April, 1870.

Brandreth's Pills.—Ext. podophylli, 0.6; succi bacc. phytolacc. decand. inspiss. 2.0; croci, 0.6; rad. podophylli pulv., 0.6; caryophyll., q. s. or 1.0; olei menth. pip., gtt. 3. M. f. pil. No. 30. Pharm. Centr. Halle, Dec., 1869, 50.

COSMETICS.

C. F. Chandler analyzed a number of hair tonics and lotions, washes and powders for the skin, with a view to detect injuri-

ous metallic ingredients. We select from the list given by him those more extensively known and advertised, and publish herewith his results.

Prof. Wood's Hair Restorative	contains in one fluid ounce,	3.08	grs. of lead.
Ayer's Hair Vigor	" " "	2.89	"
Phalon's Vitalia	" " "	4.69	"
Mrs. S. A. Allen's Hair Restorer	" " "	5.57	"
Phalon's Snow White Enamel	holds in suspension in each fluid ounce		
186.67 grains of carb. of lead.			
Phalon's Oriental Cream	holds in suspension in each fluid ounce	246	grains
	of carbonate of lead.		

Am. J. of Ph., July, 1870, 364-369.

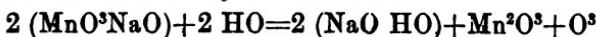
PHARMACEUTICAL CHEMISTRY.

CHEMISTRY OF INORGANIC BODIES.

NON-METALLIC ELEMENTS.

OXYGEN.

Oxygen in large quantities for industrial purposes is now prepared in a New York factory by passing superheated steam over manganate of soda contained in clay retorts. Two equivalents of the manganate of soda and two of water react upon each other as indicated by the formula:



After the decomposition of the manganate is fully effected, the steam is shut off, and superheated air admitted, when a re-oxidation of the sesquioxide to manganic acid ensues, which, of course, combines with the soda, and is now ready for a repetition of the process. Ch. N. A. R., p. 167.

Preparation of Oxygen at ordinary temperature.—Prof. Boettger states that pure oxygen is evolved perfectly free from ozone and ant ozone, if weak nitric acid (of about 9° B) is added to hyperoxide of lead or barium. Am. J. of Ph., May, 1870, 217, from Polyt. Notizbl. 1869, 252.

Gondolo proposes (Comp. Rend.) to use baryta for the prepa-

ration of oxygen from atmospheric air. For this purpose he suggests to heat a mixture of baryta, lime, and magnesia, with an addition of a small proportion of manganate of potassa, in iron retorts, through which atmospheric air is conducted. The oxygen is absorbed by the baryta under formation of peroxide, which is again decomposed by raising the temperature to a higher degree. Arch. d. Pharm., April, 1870, 70.

Oxygen on a large scale has been prepared by J. Phillips, by using subchloride of copper. This substance absorbs, when in moist condition, oxygen from the atmospheric air, and parts with it again on being heated. When using large masses, this absorption of oxygen is completed within two or three hours; it takes place almost instantaneously, if vapor of water and air react upon the subchloride at a temperature of about 200° C. Dingl. Polyt. Journ., June, 1870, 510.

HYDROGEN.

Prof. Boettger published a paper on "the production of active hydrogen during the electrolysis of water when using palladium as kathode." The palladium, which had been previously coated with a pretty thick layer of palladium black, exhibited the remarkable property to become heated to at least 200° C. on being removed from the liquid. Gun-cotton, with which the palladium had been wrapped round, exploded after three or five seconds. The palladium when thrown into absolute ether parts with its absorbed hydrogen. This gas is at first violently developed; later, however, this reaction decreases, and the developed hydrogen is absorbed by the ether.

Boettger thinks that antimony when used as kathode, in place of palladium, shows a similar deportment, absorbing hydrogen to some extent. N. Rep. f. Ph. H. 8, 490.

Absorption of Hydrogen by Iron.—Jacobs states that iron when precipitated galvanically forms silver-gray colored, velvety-looking, very finely grained masses of 7.675 spec. gr. at 15°; this metal is so hard that it scratches glass, but is also very brittle. When heated to a dull red heat it parts with a large quantity of gas, chiefly hydrogen, and loses in hardness

and brittleness; its spec. grav. also increases. Ch. N. A. R., Feb., 1870, 107.

Graham's investigations demonstrated that hydrogen under certain conditions may assume a metallic character. He found that a palladium wire when used as negative electrode of a water-decomposing battery absorbs 128 cubic c. of hydrogen.

This palladium-hydrogen differs from pure palladium by its specific gravity and its decreased tenacity. It is not as good a conductor of electricity, but possesses stronger magnetic properties than pure palladium. Arch. d. Ph. 1869, Oct. and Nov., 107.

Raoult states that the small cubes of metallic nickel ordinarily met with in commerce absorb at least 165 times their bulk of hydrogen under the same conditions as palladium does. The compact rolled and hammered nickel, however, does not show the same phenomenon. Chem. N. A. R., Dec., 1869, 373.

Reduction of Metallic Oxides by Hydrogen—W. Müller made a long series of experiments to ascertain the temperature at which the reduction to the metallic state takes place with different modifications of the same oxide. The reduction of oxide of iron takes place, according to his experiments, at temperatures ranging from 278° C. to 339° C. and depends on the condition of the oxide, whether moist or dry, whether precipitated from salts or made by simply heating the metal in the air. Oxide of lead and red lead are reduced at 310° C.; oxide of silver at 70° to 78°; oxide of gold at 85°, &c. Am. J. of Pharm., May, 1870, 219.

Mineral Waters.—An elaborate analysis of the mineral water of Alexisbad, Germany, is published by Th. Pusch, in Arch d. Pharm., Oct., 1869.

- Prof. Döremus states that a spring water, near Pompton, Passaic County, New Jersey, contains in an imperial gallon (70,000 grains) 3.10 grammes arsenic and 44.05 grammes bicarbonate of soda. Viertelj. Schr. f. Pharm., 1870, 294.

Water containing gypsum can be readily purified, according to H. Reinsch, by mixing it with finely pulverized native carbonate of baryta (Witherite). N. Jahrb. f. Ph., Nov., 1869, 283.

For the determination of the entire amount of carbonates contained in a mineral water, Chevalet suggests (Bullet. Mens. de la Soc. Chim. de Paris) to distil 200 c. c. with 0.5 grm. sal ammoniac, and to collect the first 100 c. c. of the distillate in 10 c. c. normal sulphuric acid. After completion of the process, the amount of sulphuric acid not combined with ammonia can be readily ascertained by acidimetry, when the amount of carbonates contained in the water can be easily calculated from the data thus obtained. N. Jahrb. f. Pharm. H. 8, 499.

Artificial Mineral Waters.—Manufacturers of artificial mineral waters are frequently annoyed by the oxidation of iron preparations, which enter into their composition in spite of their exertions to exclude the atmospheric oxygen. To avoid this difficulty, Hager suggests to add a small proportion of sulphite of soda, lime, or magnesia, and states that these substances act as perfect preservatives against oxidation. Pharm. Centr. H., 1869, 36.

NITROGEN.

Nitrogen protoxide is usually made by heating ammonium nitrate in glass retorts, but as this method causes a great deal of annoyance by the breaking of the retorts, J. J. McNefee attempted, with perfect success, to prepare it in cast-iron vessels. The author was able to fill a receiver of forty gallons capacity in forty minutes. Dental Cosmos, Dec., 1869, 632.

Some interesting improvements in the mode of administering protoxide of nitrogen have been perfected by Coleman. After arguing that an admixture of air to protoxide of nitrogen greatly impairs the efficacy of the latter gas, the author states that he arranged his apparatus in a manner permitting to dilute the oxygen of the residual air of the lungs with nitrogen. He then permits the patient to inhale pure protoxide of nitrogen, and asserts that the patients become thus more speedily unconscious and that anaesthesia lasts longer. Dental Cosmos, Dec., 1869, 659, from Lancet.

Protoxide of Nitrogen.—F. B. Benger states that an aqueous solution of laughing gas is largely prescribed in Manchester, England, by some physicians, and is preferred to other effer-

vescing waters by many persons, who now drink it regularly. Pharm. Journ. and Transac., Nov., 1869, 288.

Nitric Acid.—Hager mentions that nitric acid, if in combination with soda, can be estimated by calcining the alkaline nitrate with about double its weight of pure crystallized oxalic acid. The residue is determined volumetrically with normal acid, of which each equivalent represents an equivalent of nitric acid or nitrate. Hager's C. Halle, Oct., 1869, 41.

The reaction of sulphuric acid upon the nitrogen oxides has been studied by Dr. Winkler, whose researches gave the following results: 1. Hydrated sulphuric acid does not absorb binoxide of nitrogen. 2. Hydrated sulphuric acid combines readily with nitrous acid, and this combination is not destroyed by heating, but immediately so by addition of water. 3. Binoxide of nitrogen and oxygen do not form, in the presence of sulphuric acid, as usual, hyponitric acid, but form nitrous acid even when oxygen is in excess. 4. Hyponitric acid in gaseous as well as in fluid state, combines with hydrated sulphuric acid; this compound, however, is destroyed by heat, hyponitric acid is given off, either unchanged or is converted into nitrous acid, which combines with the sulphuric acid, and free oxygen is given off. 5. Sulphuric and nitric acids only form mechanical mixtures together. 6. Nitrous and sulphurous acids yield, in the presence of moisture, hydrated sulphuric acid and binoxide of nitrogen, which escapes. 7. Hyponitric acid forms, when in contact with moist sulphurous acid, nitrosulphuric acid, exhibiting solid crystalline structure. Ch. N. A. R., March, 1870, 169.

Ammonium Carbonate.—J. C. Sticht discovered in commercial English ammonium carbonate a noticeable quantity of iodine. Wittstein Viertelj. f. pr. Ph. B. 18, 441.

CHLORINE.

Chlorine.—An important step in the production of chlorine gas on a large scale has been the adoption of the so-called Dunlop's process, whereby the same quantity of manganese could be used over and over again for the generation of almost unlimited amounts of chlorine. Dunlop proposed to decompose the solu-

tion of chloride of manganese by means of carbonate of lime, and to reoxidize the resulting carbonate of manganese by exposing it in dry condition to the action of air at an elevated temperature.

Walter Weldon suggests now a much simpler method by which the reoxidation can be effected in the liquid itself. Weldon directs to admix to the chloride of manganese liquors resulting from a previous chlorine generation, a proportion of lime, which is sufficient, not merely to decompose the chloride of manganese, but such an additional quantity that every equivalent of precipitated MnO , mingles with an equivalent of lime when atmospheric air is blown through the mixture. This produces a rapid oxidation of the MnO , converting it into MnO_2 , which forms with the additional proportion of lime a compound called by Weldon "manganite of calcium." This is separated after settling from the supernatant chloride of calcium solution, and answers for the production of chlorine without previous desiccation. Am. Journ. of Ph., Nov., 1869, from Chem. News, Sept., 1869.

Aq. Chlorinii Extemp.—The May number of the Am. J. of Ph. contains, page 207, a formula for extemp. preparation of chlorine water, which reads as follows: Put in a bottle potass. chlorat. 40 grains; add muriatic acid, C. P. $\frac{1}{2}$ oz. troy. When the bottle begins to get filled with chlorine vapors, add dist. water one fluid ounce. Stopper the bottle, and, when the crystals have dissolved, add dist. water up to one pint.

Hydrochloric Acid.—A. Bettendorff observed that arsenious and arsenic acid are precipitated from a sufficiently concentrated muriatic acid by the addition of protochloride of tin; the precipitate contains from 96 to 98.6 per cent. arsenic. After the removal of this precipitate the muriatic acid may be distilled, and is then absolutely free from arsenic. Am. J. of Ph., May, 1870, 219.

BROMINE.

New Process for the Preparation of Hydrobromic Acid.—Bromine in vapor is passed into melted paraffine, contained in a tubulated retort; part of the bromine replaces hydrogen in the

paraffine, whilst another portion escapes in the form of hydrobromic acid. The product resulting from the action of the bromine decomposes toward 180° C., disengaging in the form of hydrobromic acid, the greater part of the combined bromine. The residue is a carbonaceous mass, which retains 31.6 per cent. of its weight of bromine. Champions and Pellet (*Comptes Rendus*, March 21), from *Pharmac. Journ. and Transact.*, May, 1870, 721.

IODINE.

Test for detecting very minute quantities of Iodine.—Alfraise suggests the following mode: Take water, 100 grms., starch, 1 grm., nitrate of potassa, 1 grm.; boil this mixture during five minutes, and after cooling, pour into a bottle, to be well stoppered. Of this solution take 10 c. c., add one single drop of hydrochloric acid. Take as much as a pin's head in size of the dry salt to be tested for iodine, place it in a clean porcelain capsule, and add one drop of the test-fluid last mentioned. The least trace of iodine gives rise to the formation of a well-defined blue color. *Chem. N. A. R.*, Dec., 1869, 373.

A quantitative estimation of Iodine can be effected, according to W. Reinige, by using a titrated solution of permanganate of potassa. The iodides are thereby converted into iodates, while the presence of chlorides, bromides, and iodates, is of no influence on the result. *Zeitschr. f. Anal. Ch.*, 1870, 39.

Quantitative determination of Bromine and Iodine in mixtures containing Chlorine.—Field proposed in the *Quar. Jour. of the Chem. Soc.*, No. 39, p. 284, to estimate the relative quantity of the three halogens with nitrate of silver, according to a method which had been suggested by Wittstein, in his *Viertelj. Schr. f. Ph.*, 3, 236, for the determination of bromine and iodine.

The practicability of such a determination having been doubted, Otto Huschke proceeded to re-examine it, and found it fully reliable. He operates as follows: The solution containing the three halogens is divided into three equal parts, and each of them precipitated with nitrate of silver. One of these deposits is weighed directly, and represents the quantity of the

three halogens, in combination with silver (precip. a); the second precipitate is digested with bromide of potassium, which decomposes the silver chloride under formation of bromide of silver, but does not act on the iodide of silver (prec. b); the increase in weight caused thereby represents the difference between the absorbed bromine and the displaced chlorine. The third precipitate is digested with iodide of potassium, which decomposes both chloride and bromide of silver under formation of iodide (precip. c). A simple calculation gives now the quantities of both iodine and bromine, and these two subtracted from the quantity of all three halogens, gives the proportion of chlorine thus: the amount of iodine is found by multiplying with 2.706 the weight difference between precipitates b and c. The proportion of iodide of silver (calculated from the known quantity of iodine), is now deducted from the weight of precipitate a, and also from that of precipitate b, whereby the balances a¹ and b¹ result. The difference in weight between these two is multiplied by 1.795, which shows the proportion of bromine. Viertelj. Schr. f. Ph., 1870, 29-36.

Simple Method for recovering Iodine from Iodide of Mercury.
—The iodide of mercury is, according to Henry, digested with water to which granulated zinc or iron borings are added. A soluble iodide of zinc is obtained, from which the iodine is separated by means of sulphurous acid. Ber. d. d. Chem. Ges. zu Berlin, No. 17, 1869.

SULPHUR.

A deposit of pure Sulphur has been discovered near Lake Charles, by the Louisiana Petroleum Co., while boring for oil, at a depth of 442 feet. The stratum of pure sulphur is from two to eight feet thick, and is imbedded into a limestone rock which itself yields about 50 per cent. of sulphur. Chem. News. A. R., Dec., 1869, 361.

Sulphur deposits have been also discovered on the island of Saba, Netherlands, West Indies. The deposit is located on the northern part of the island, and extends for a distance of more than a mile along the sea-line. Its thickness varies from 15

to 50 feet, and its elevation above sea-level varies from 45 to 200 feet. Chem. N. A. R., Dec., 1869, 380.

Sulphur.—To the northeast of Borax Lake, in California, and about one mile from it on the borders of Clear Lake, is a large deposit of sulphur, where solfataric action is still apparent. The amount of sulphur deposited in this place is very large, covering an area of several acres, and extending to a depth not yet ascertained. From six to eight tons of this sulphur are refined daily, and used in the manufacture of sulphuric acid, gunpowder, &c. From the Progress and Condition of Industrial Chemistry, by J. Lawrence Smith, Washington, 1869.

Regeneration of pure Sulphur from the alkali waste of Soda Works.—Max Schaffner publishes a process which he claims to be superior to that of P. W. Hoffmann and Ludwig Mond, and whereby 9000 cwt. of chemically pure sulphur are produced at the factory at Aussig, Germany. A hundredweight of sulphur requires for its production from 2 to $2\frac{1}{2}$ cwt. muriatic acid. Chem. Centralblatt, 1864, 491.

Sulphurous Acid in aqueous solution, when exposed in sealed tubes to the sunlight, begins to decompose after a period of two months under deposition of sulphur in a finely divided state. Amer. Jour. Science and Arts, 1869.

Sulphurous Acid.—Wentworth Lascelles Scott states that for producing sulphurous acid an oil of vitriol, containing 74 per cent. of anhydrous acid, is found more convenient in practice than either a weaker or stronger variety, as when too concentrated acid is employed a portion of it is liable to entire reduction, and sulphur incrustations are formed in unpleasant abundance, while on the other hand a dilute vitriol causes the evolution of sulphuretted hydrogen.

The same author publishes a table (given below), showing the mean spec. grav. of solutions of sulphurous acid, containing from 0.5 to 10 per cent. of gaseous acid, viz.:

Per cent. of SO ₃	Spec. Grav. at 60°	Per cent. of SO ₃	Spec. Grav. at 60°	Per cent. of SO ₃	Spec. Grav. at 60°
0.5	1.0028	4.0	1.0221	7.5	1.0401
1.0	1.0056	4.5	1.0248	8.0	1.0426
1.5	1.0085	5.0	1.0275	8.5	1.0450
2.0	1.0118	5.5	1.0302	9.0	1.0474
2.5	1.0141	6.0	1.0328	9.5	1.0497
3.0	1.0168	6.5	1.0353	10.0	1.0520
3.5	1.0194	7.0	1.0377		

—Pharm. Journ. and Trans., Oct., 1867, 217.

A new apparatus for the concentration of sulphuric acid is described by M. Cotelle. It consists of a column lined inside with fire-brick, outside with ordinary brick, and filled with calcined pumice-stone. The chamber-acid is made to trickle on the pumice-stone, and meets in descending the column, a current of highly heated air forced into the lower part of the column. The apparatus is so arranged that the acid when arriving at the bottom of the column is found to be concentrated, and may be drawn directly into vessels ready for shipment. Chem. News, Aug., 1869.

Adulteration of Sulphuric Acid.—I. Fleischer detected sulphate of soda in oil of vitriol, manufactured in Stettin, which had been fraudulently added to increase its specific gravity. Am. J. Ph., May, 1870, 217, from D. Indust. Zeit.

Solubility of Sulphates in Sulphuric Acid.—H. Struve found that 100 parts of concentrated sulphuric acid will dissolve:

Sulphate of Lime,	2.08	Sulphate of Baryta,	5.69
" " Strontia,	5.68	" " Lead,	0.18

The solubility of these substances in Nordhausen sulphuric acid is still greater. Zeitschr. f. Anal. Chem., 1870, 34.

Decomposition of Sulphates by High Temperatures.—It is known long since that sulphate of lead loses its sulphuric acid on being exposed to a higher temperature. Boussingault demonstrated by accurate experiments that the sulphates of

alkaline earths also sustain a partial decomposition when heated to dull redness. *Viertelj. Schr. f. Ph.*, 1870, 93, from exchanges.

A new Sulphur Acid. has been discovered by Schützenberger. It is produced if aqueous sulphurous acid is allowed to act on metallic zinc. It has been denominated by Schützenberger hydrosulphurous acid, and is said to exhibit remarkable properties, such as decolorizing indigo solution, or reducing metals from their solutions. *Pharm. C. Halle*, Dec., 1869, 49.

Hydrogen Sulphide.—Fr. Mohr suggests to preserve aqueous hydrothionic acid in bottles with a stratum of petroleum on the surface of the liquid. A tubulation at the lower part of the bottle with a bit of glass tubing inserted through a cork, and a piece of rubber tubing with a spring clamp allows the operator to use the liquid in the bottle, without being annoyed by the oil-stratum. This mode of preservation effectually excludes the atmospheric oxygen. Many substances manifesting a proneness to oxidation, or to absorption of carbonic acid from the air, like sulphurous acid water, protochloride of tin solution, baryta water, caustic soda, and potassa solution, may be kept in exactly the same manner. *Pharm. Centr. Halle.*, Nov., 1869, 47.

CARBON.

The Carbonic Acid contained in bicarbonates can be estimated according to Lory, by means of a solution of phosphate of copper in a very slight excess of hydrochloric acid. When this reagent is added to any water containing alkalies or alkaline earths in the state of carbonates or bicarbonates, there is at first a bluish colored cloudiness or turbidity produced, which disappears again on the addition of a larger quantity of the reagent. The quantity of reagent used is directly proportional to the amount of carbonate or carbonic acid present. The reagent itself is standardized with a known quantity of bicarbonate of soda. *Chem. N. A. R.*, April, 1870, 215.

Carbon Bisulphide.—This important article is manufactured in France, in vertical retorts 1.8 metres high by 0.5 internal

diameter, in which 125 kilos sulphur are consumed during twenty-four hours. Chem. News, Jan. 7, 1870.

M. Cloes states that commercial sulphide of carbon can be deprived of its fetid odor by agitating it with corrosive sublimate, and redistilling it over a water-bath, after adding 0.02 of its weight of a pure inodorous fat. Chem. News, Jan., 1870.

Solid Bisulphide of Carbon has been obtained by Dr. von Wartha, by the rapid evaporation of this liquid itself in the same way as solid carbonic acid is formed. The solid sulphide melts at 9° F., and has the appearance of small cauliflowers. Cosmos, March, 1870.

Th. Sidot states (Compt. Rend., lxix, 1303, Dec., 1869), that the yield in manufacturing bisulphide of carbon depends mostly on the temperature to which the apparatus is heated. The production is most favorable by maintaining the heat at "redness," but decreases if lowered to "dull redness," and also if increased to "bright redness." This seems to be due to the circumstance that bisulphide of carbon decomposes at too high a temperature into carbon and sulphur. Sidot noticed that the carbon thus deposited possesses peculiar properties; it is sonorous, exhibits metallic lustre, and expands on being heated.

PHOSPHORUS.

Blondlot found that phosphorus, when acted on by aqueous ammonia, turns brownish-red, and at length black. Thus changed it can be converted into a fine powder by trituration under water. Free phosphorus if yet admixed to this powder can be extracted with bisulphide of carbon, when the remaining substance may be desiccated over the water-bath at a temperature of 100° C. Arch. d. Ph., Oct. and Nov., 1869, 107.

Phosphoric Acid Crystallized.—G. Kramer reports that a solution of phosphoric acid when so far evaporated that its percentage of water corresponds to the formula 3HO , PO^5 congeals on cooling, to a mass of very fine transparent prismatic crystals. Dingler's Polyt. J., Aug., 1869.

Test for Phosphoric Acid.—An elegant test for phosphoric acid in minerals has been discovered by Bunsen. It is based

on the formation of phosphoretted hydrogen by means of sodium. The pulverized, dry; and calcined mineral is fused with sodium, whereby phosphide of sodium is formed, which evolves phosphoretted hydrogen on being moistened with water. Arch. d. Pharm., April, 1870, 72.

ARSENIC.

Detection of Arsenic.—A method most frequently resorted to for the discovery and separation of arsenic in and from antimonial preparations consists in fusing the mixed sulphides of arsenic and antimony with nitrate of soda, whereby arseniate of soda is formed, which is soluble in water, whilst the resulting antimonial compound is not taken up by it. The arsenical solution is, however, not adapted for introduction into Marsh's apparatus, on account of the nitrous and nitric acid compounds contained in it, and it is necessary to drive them away by continued boiling with concentrated sulphuric acid. To avoid this unpleasant operation, Ernst Biltz proposes to deposit the arsenic from such solutions in the form of arseniate of silver, which, after mixing it with hydrochloric acid, may be introduced into Marsh's apparatus.

Biltz operates as follows: The solution containing arseniate of soda and nitrates is mixed with nitrate of silver, and an excess of ammonia. The liquid is then slowly evaporated over the water-bath, and the dry residue, after repeated washing with water, mixed with hydrochloric acid. He used this process in examining for arsenic the following officinal compounds: Sulph. aur. ant., black antim., tartar emetic, subnitr. bismuth. Archiv der Pharm., Oct., 1869.

BORON.

Boracic acid, and with it, borax, is made in England from a mineral substance occurring amongst the nitrate of soda deposits of Southern Peru. It is there called "Teza," and is according to an analysis of Ulex, a double salt of borate of soda and borate of lime, represented by the formula: $\text{NaO}, 2\text{BO}^3 + 2\text{CaO}, 2\text{BO}^3 + 10\text{HO}$. N. Jahrb. f. Pharm., May, 1869.

Borax abounds in the water of a small lake situated in Lake County, 110 miles from San Francisco, California. It is there produced by a rather crude process, and it is calculated that the amount of refined salt daily obtained varies from 2500 to 2600 pounds. The crude borax occurs in the form of crystals of various dimensions imbedded in the mud of the bottom of the lake. It has been subjected to analysis by Mr. S. McAdam of Edinburgh, and contains according to him in 100 parts:

Biborate of Soda, dry,	51.85
Water of crystallization,	45.44
Insoluble matter,	1.42
Sulphate of Soda, dry,	0.06
Chloride of Sodium, dry,	0.08
Phosphate of Soda, dry,	1.15—100.00

Mr. Moore of San Francisco, gives the following as the composition of the water of Borax Lake, which has a mean spec. grav. of 1.274. An imperial gallon contains:

Chloride of Sodium,	1198.66
“ Potassium,	9.92
Iodide of Magnesium, . . . . .	.22
Bromide of “	trace.
Bicarbonate of Magnesia,	“
“ Soda,	188.28
“ Ammonia,	trace.
Carbonate of Soda,	578.65
Biborate “	281.48
Phosphate of Alumina,	3.52
Sulphate of Lime,	trace.
Silicic Acid,	2.87
Matters volatile at a red heat,	238.66—2501.76

Pharmac. Journal and Transactions, Aug., 1869.

M E T A L L I C E L E M E N T S.

POTASSIUM.

Potassium Iodide.—Julius Mueller found that a solution of potassium iodide was decomposed under liberation of iodine, by passing through a paper filter containing manganese. Archiv d. Pharm., Oct., 1869.

Dr. Rabuteau found that alkaline iodides, when containing admixtures of iodates, operated injuriously upon the health of patients. He seeks to explain this effect by calling attention to the fact, that iodine is liberated from a mixture of an iodide with an iodate if acted on by an acid, and assumes that the free acids contained in the gastric juice will cause the same phenomenon. He then argues that the so generated free iodine exerts an irritating action upon the mucous membrane of the stomach, and comes to the conclusion that for these reasons it would be highly important to use only such potassium iodide as is free from iodate. N. Rep. f. Ph., 1869, 7, 423.

Potassium Bromide when contaminated with iodine, is freed from the latter, according to Dr. Baudrimont, by an addition of bromine water to its solution. The liquid is then heated to boiling, and kept so until no more vapors of iodine are given off, when it is evaporated to dryness, in order to eliminate the excess of bromine. Chem. N. A. R., Dec., 1869, 382.

Pure Iodate of Potassa, according to Stas, is readily obtained by heating a mixture of equal equivalents of chlorate of potassa and iodide of potassium in a retort, just to the temperature of fusing the chloride. The fused mass is extracted with cold water, and the residue repeatedly crystallized from hot water. Am. J. Ph., May, 1870, 217.

Action of direct sunlight upon Iodide of Potassium.—A solution of iodide of potassium is, even when kept in well-closed bottles, slowly decomposed by the action of daylight, and assumes a somewhat yellowish tinge, due to free iodine. O. Loew made some experiments to ascertain how far such a decomposition proceeds, and whether it takes place also, if the oxygen of the air is excluded. For this purpose, he filled several tubes with iodide of potassium solution, taking care to expel all air from some of them, and exposed them during several months to the action of sunlight. On opening them again, he noticed the following results: (1.) Such tubes wherein no air at all was left were found to be perfectly colorless, no decomposition of the contents having taken place. (2.) Under the influence of light,

the atmospheric oxygen decomposes the iodide, a small proportion of iodine being liberated, while hydrate of potassa is found in the liquid. (3.) This decomposition is limited, and does not, even when a large quantity of oxygen is present, increase, in consequence of the liberated iodine reacting on the hydrated potassa, whereby iodate of potassa and iodide of potassium are produced. *Zeitschr. f. Chem. von Beilstein*, Nov. 20, 1869.

Bromide of Potassium.—Adrian found commercial bromide of potassium adulterated principally with sulphate of potassa (3.3 per cent.); chloride of potassium (30 per cent.); free or carbonated alkali (4 per cent.); iodide and iodate of potassa. Commercial bromine contains, according to this author, frequently chlorine, from which it can be freed by agitation with water and ether, when brominechloride dissolves in the ether, and is subsequently decomposed by the water into free bromine and hydrochloric acid. Bromine thus purified, answers well for the preparation of a pure potassium salt. *Journal de Ph. et Ch.*, xi, 17.

SODIUM.

Metallic Sodium and Chlorine.—J. A. Wanklyn showed that when chlorine gas is passed over metallic sodium, even when the metal is fused, and whilst in a state of fusion, shaken in contact with the gas, so as to expose fresh metallic surface, there is no action, the gas passing off without being absorbed. *Chem. News A. R.*, Feb., 1870, 67.

Crystallized Hydrated Soda.—O. Hermes subjected the crystals obtained during severe winter weather to analysis, and found they contained 30.09 per cent. oxide of sodium, which led him to the formula $\text{NaO}+8\text{HO}$. *Dingl. Pol. Journ.*, April, 1870, 172.

Bachet patented a process for the manufacture of caustic soda, in which he proposes to effect the decomposition of chloride of sodium, by oxide of lead. *Ch. N.*, vol. xxi, p. 148, April, 1870.

Sodium Carbonate.—R. Fresenius found commercial carbon-

ate of soda (sal soda) frequently contaminated with perceptible quantities of arseniate, or arsenite of soda. The quantity of arsenic found by him, though small, is sufficient to affect the purity of preparations for medicinal and chemical use. Chem. N. A. R., January, 1870, 37.

Sodium Bicarbonate.—Ernst Biltz found that the presence of neutral carbonate of soda in commercial bicarbonate is not indicated by Epsom salt solution, unless its proportion rises as high as 30 per cent. He suggests, therefore, on account of the uncertainty of this method, to use corrosive sublimate as the best test. The deportment of corrosive sublimate with soda is described by him as follows:

1. Neutral carbonate of soda precipitates from a solution of corrosive sublimate at once brown-red oxide of mercury, mixed with oxychloride of mercury.
2. Bicarbonate of soda deposits from corrosive sublimate solution bright red crystalline oxychloride.
3. Corrosive sublimate solution, when added to a large excess of bicarbonate of soda, does not produce any precipitate in consequence of the formation of a soluble double salt of carbonate of mercury and soda.

He proposes now to add a definite quantity of a mercurial titre solution to the liquid, which contains a known quantity of the suspected article, and asserts that the operator is capable of forming an opinion as to the percentage of carbonate of soda by observing the nature of the formed precipitate, whether it consists merely of a white cloudiness or a dense red deposit, provided he takes also the time in consideration which is required for its formation. Arch. d. Ph., December, 1869, 193.

New Test for Caustic Soda.—C. Müller found that if a small quantity of permanganate of potassa solution is admixed to a solution of commercial soda, the mixture assumes a green color, but that it remains red if pure carbonate of soda is used instead of commercial sal soda. He feels certain that this change is not produced by a contamination of commercial soda with hypo-sulphite, and is convinced that the presence of caustic soda causes this reaction. Pharm. Centr. H., 1869, 38.

Silicate of Soda.—F. A. Flückiger, in reviewing statements made by Fuchs and Persoz (Gmelin, 5te Aufl. II, 338), Graham (Annalen d. ch. cxxi, 38), and Ordway, comes to the conclusion that all salts of sodium, potassium, and ammonium, which are distinguished by great solubility, precipitate the silicic acid from water-glass solutions, and proved it by actual experiments with a number of salts. He found that creasote (made from beechwood), phenol (carbolic acid), and a number of organic bodies, such as albumen, glue solution, and mucilage from gum arabic, also possess the property of separating silicic acid from water-glass solutions. N. Rep. f. Ph., 1870, pp. 258–267.

CALCIUM.

Bleaching Powder.—It is estimated that about 120,000 tons of bleaching powder have been produced in Great Britain, France, Belgium, and Germany together, during the year 1868. Chem. News, 1869, September.

BARIUM.

Oxide of Barium.—Nicklès describes an apparatus for the production, on a large scale, of caustic baryta by continuous process. Dingl. Polyt. Journ., January, 1870, 143.

STRONTIUM.

Larger quantities of metallic strontium are prepared, according to B. Franz, by decomposing strontium amalgam at red heat in a current of hydrogen gas. The strontium amalgam is obtained by digesting sodium amalgam at a temperature of 90° C. with a solution of purified chloride of strontium. Pharm. C. Halle, November, 1869, 46, from Journ. f. Prakt. Ch.

MAGNESIUM.

Epsom Salt.—Roasted and ground coffee, when boiled in a solution of Epsom salt, is said to completely hide the bitter taste of the latter compound. N. Jahrb. f. Pharmacie, 1869.

Hydrated Silicate of Magnesia, prepared by precipitating a solution of Epsom salt with a solution of soluble glass, has been

used with great success by Dr. Garaud as a substitute for bismuth in epidemic cholera diarrhoea. Dose, 5 to 10 grammes, with gum-water. Am. Journ. Pharm., September, 1869, from exchanges.

The Magnesit, from Baumgarten, contains frequently oxide of nickel. This magnesit is used in the manufacture of mineral waters, and the residue obtained thereby worked up into Epsom salt. Hence it is not impossible, as remarked by Prof. Poleck, that this latter substance might be contaminated with nickel. Arch. d. Pharm., März, 1870, 250.

ALUMINUM.

Aluminate of Soda.—Hitherto kryolite has been used for the manufacture of the white opaque glass (semi-porcelain) of which the French gas globes are often made, but it seems destined to be supplanted by aluminate of soda. In the application of the latter no fluorine compounds are evolved, which act very much on the substance of the melting-pots. The aluminate, as manufactured by the kryolite soda makers, is quite free from iron, which is never the case with kryolite itself. Other applications of the new manufacture are in dyeing and print works, as a mordant in soap-making, &c. Chem. N. A. R., Feb., 1870, 97.

IRON.

Protosulphate of Iron, according to M. Welborn, may be kept from even the very least trace of oxidation by placing with it a piece of camphor wrapped in a piece of clean and dry paper. Deutsche Ind. Zeitung.

Iron, absolutely pure, has been obtained by A. Matthiessen and S. Prus. Szczepanowski, from chemically pure ferrous sulphate in the following manner. Pure dried ferrous sulphate and pure dried sodium sulphate, in equal proportions, were fused in a platinum crucible until the evolution of sulphurous acid gas ceased. The fused mass was extracted with water, when the whole of the iron was left as pure crystalline oxide; this was reduced by hydrogen, and the spongy iron thus ob-

tained pressed into solid buttons and melted with the oxyhydrogen blowpipe. Chem. News, A. R., Oct., 1869, 229.

Ferric Acid is produced by fusing a mixture of one part of ferrum limatum and two parts of nitrate of potassa. The fused mass, when perfectly cold, is extracted with water, when a deep reddish violet colored solution is obtained containing potassium ferrate. C. N. A. R., Oct., 1869, 240.

Magnetic Proto-sesquioxide of Iron, also known under the term æthiops martialis, is obtained, as shown by Liebig and Wöhler, if a solution containing equal equivalents of sulphate of protoxide and sulphate of sesquioxide of iron is precipitated with ammonia. This black magnetic proto-sesquioxide of iron forms, with acids, saline compounds. Leport prepared a chloride and a sulphate, and states that the latter is a perfectly white salt, which does not change in dry air, but absorbs moisture with great rapidity. The composition of this salt is represented by the formula $\text{FeO}_2\text{SO}_3 + \text{Fe}_2\text{O}_3\text{SO}_3 + 15\text{HO}$. Journal de Ph. et de Chimie. Aug., 1869.

An improved method for estimating iron volumetrically by hyposulphite of soda has been published by A. C. Oudemans. It is executed as follows: The iron solution is mixed with a few drops of sulphate of copper solution and afterwards with a sufficient quantity of sulphocyanide of potassium, until the liquid has assumed a deep red color. The hyposulphite is then added from a burette until the red color is entirely destroyed. The quantity of hyposulphite which was required indicates equivalent for equivalent the proportion of iron present, according to the equation: $2(\text{NaO}_2\text{S}^2\text{O}^3) + \text{Fe}^2\text{Cl}^3 = \text{NaO}_2\text{S}^4\text{O}^6 + \text{NaCl} + 2\text{FeCl}$. An excess of muriatic acid in the iron solution does not alter the results. An excess of hyposulphite precipitates, on the completion of the process, the copper in the form of sulphocyanide. Pharm. Centr. Halle, Sept., 1869, 39.

Causes of Oxidation of Iron.—Iron rust found, far away from any place where industrial enterprises are carried on, was analyzed by F. C. Calvert, who found it composed in 100 parts, as follows:

Sesquioxide of Iron,	.	.	.	.	.	.	98.094
Protoxide of Iron,	.	.	.	.	.	.	5.810
Carbonate of Iron,	.	.	.	.	.	.	0.900
Silicic Acid,	.	.	.	.	.	.	0.196
Ammonia,	.	.	.	.	.	.	trace.
							100.00

The author was induced by the results of this analysis to examine into the question whether the rusting of iron is caused by the presence of either oxygen or water vapor or carbonic acid. He found that pure oxygen, dry carbonic acid, and a mixture of dry oxygen gas with ammonia do not act upon iron. Moist carbonic acid produces a thin whitish colored crust upon the surface; a rapid oxidation, however, takes place in a mixture of moist carbonic acid with oxygen. *Comptes Rendus*, lxx, 453, 1870.

H. Köhler instituted an elaborate essay to decide the preference of *soluble saccharated ferric oxide* as an antidote in cases of arsenical poisoning over hydrated sesquioxide of iron. After detailing the results of experiments made with animals, and alluding to the fact of having by its administration saved the life of a young man poisoned with arsenic, he comes to the following conclusions: "Soluble saccharated ferric oxide is superior to hydrated sesquioxide of iron because, 1. It is not necessary to prepare it extempore in a case of emergency, as it will not deteriorate by age, whilst hydrated sesquioxide, on being kept, loses its hydrate water, thereby becoming inert. 2. It is unpleasant to swallow hydrated sesquioxide of iron on account of its muddy condition. 3. Both preparations may be given in large doses without inconvenience, but as the saccharated compound is soluble in water, it must possess a greater rapidity of action than the insoluble oxide."

In the course of his experiments, Köhler noticed that arsenious acid as well as iron is absorbed to a certain extent by the organism, no matter how speedily the iron preparations may have been administered. He attributes this circumstance to the fact that neutral alkaline salts and albuminous substances retard the formation of insoluble ferric arsenite. Accordingly he sug-

gests the following rules for the therapeutical administration of soluble saccharated ferric oxide in cases of arsenical poisoning: 1. The antidote must be injected in excess. 2. The drinking of albuminous liquids, recommended in other cases of poisoning, has to be omitted. 3. The same may be said in reference to neutral alkaline salts, which are usually administered as laxatives. 4. A speedy removal of the insoluble ferric arsenite by emetic is necessary. N. Rep. f. Ph., 1869, H. 7, 386.

An interesting decomposition of salts of Sesquioxide of Iron has been observed by H. Debray. This gentleman noticed that if a solution of neutral sesquichloride of iron, so much diluted that its color is scarcely perceptible, be heated to 27° C., the liquid becomes strongly colored and assumes the characteristic hue of sesquioxide of iron. The color thus imparted to the solution by application of heat is retained on cooling and the chemical properties of the iron salt are greatly modified. Saline solutions, of sea-salt &c., produce in the so modified chloride a gelatinous precipitate of hydrated sesquioxide of iron, which, when immediately washed, redissolves in the water. If a solution of the so modified iron salt is subjected to dialysis, it is found that almost pure hydrochloric acid passes through whilst soluble sesquioxide of iron remains on the dialyser. Ch. N. A. R., April, 1870, 188.

Iodate of Sesquioxide of Iron has of late been introduced into medical practice, by Prof. Cameron, of Dublin. The directions for its preparation are as follows: Five fluid drachms of sesquichloride of iron solution, diluted with four ounces of water, are mixed with a solution of iodide of potassium. The white precipitate is washed with water and dried at moderate temperature. N. Jahrb. f. Pharm., Nov. and Dec., 1869, 302.

NICKEL.

Nickel has been discovered at Mine La Motte, Missouri, where it occurs as a constituent of a mineral called Linnæite. Am. Journ of Ph., July, 1870, 357.

MANGANESE.

An estimation of peroxide of manganese in manganese ores can be accomplished in a variety of ways, the method of Fresenius and Wills being thus far, however, most generally preferred by consumers of the ore. Attention has been of late called to the fact that this method shows, indeed, correctly the proportion of binoxide of manganese in the sample; but, on the other hand, does not represent its value as an agent for the production of chlorine. Henri E. Scherer and G. Rumpf examined the different processes which had been suggested, and came to the conclusion that Bunsen's method is the only one which gives accurate and reliable results, and presents at the same time such a simplicity of manipulation that it cannot be objected to by any skilled operator. According to this method a weighed quantity of manganese is dissolved in hydrochloric acid, and the escaping chlorine received in a strong solution of iodide of potassium. The iodine liberated by the absorption of the chlorine is subsequently estimated by means of a standard solution of hyposulphite of soda and starch solution. To prevent the solution of iodide of potassium from being sucked back into the generating flask, a few pieces of magnesite must be introduced with the manganese, so that a continual escape of carbonic acid takes place through the solution. C. N. A. R., Feb., 1870, 82.

ZINC.

For many reasons it seems desirable to use zinc instead of brass for the construction of mathematical and physical instruments. All attempts, however, to impart to this metal a black color, such as is so frequently noticed on brass instruments, had been unsuccessful until lately, when Mr. Ph. Neuman discovered that a beautiful black coating (patina) can be produced on zinc by manganous nitrate. N. Rep., f. Ph., 1869, H. 7, 419.

IRIDIUM.

Prof. Dr. Böttger publishes a new method for the preparation of this new elementary body. He also suggests that the deposit obtained by an addition of aqua ammoniae to an iridium salt is

probably not the hydrated oxide of this metal, but an ammonia combination, because it retains ammonia with great persistency even after being subjected to a temperature of 212° F. N. Rep. f. Ph. von Dr. Buchner, Bd. xviii, 428.

COPPER.

Native copper has been discovered at Vielsalen, province of Liège, Belgium, associated with malachite. C. N. A. R., Oct., 1869, 239, from Exch.

M. Jackson states that a mass of native copper, measuring 65 x 32 x 4 feet, weighing 1000 tons and valued at \$400,000, has been discovered in the Phoenix Copper Mine, near Lake Superior. C. N. A. R., Feb., 1870, 98.

Suboxide of Copper dissolves, according to T. Sterry Hunt, in a concentrated solution of chloride of magnesium with production of subchloride of copper and hydrated magnesia.

Protochloride of iron when reacting upon suboxide of copper reduces the latter partly to the metallic state, whilst another portion is converted into subchloride, which dissolves in the presence of chloride of sodium; the iron itself is deposited as sesquioxide. This reaction takes place according to the following formula: $3\text{Cu}^2\text{O} + 2\text{FeCl} = 2\text{Cu} + 2\text{Cu}^2\text{Cl} + \text{Fe}^2\text{O}_3$.

Oxide of Copper, when digested with protochloride of iron, also suffers decomposition resulting in the production of proto- and subchloride of copper on the one hand, and sesquioxide of iron on the other.

Hunt suggests that this deportment of the oxygen compounds of copper can be made available for extracting this metal from its ores, and describes a process for which he also obtained a United States patent on the 9th February, 1869. Dingl. Polyt. Journ., April, 1870, 132-142.

TIN.

A sample of tin ore has been examined by M. Jackson which came from Winslow, Maine. He found the ore to yield, in its crude state, 46 per cent. of pure tin, and, after washing, about 75.5 per cent. C. N. A. R., Feb., 1870, 98.

Scraps of tinned iron can be utilized, according to M. Bock, by placing them in a tank made of stout sheet-iron, and adding for every 100 pounds of scraps 6 pounds of flowers of sulphur; 10 pounds of caustic soda, with a quantity of water. This mixture is brought to ebullition by means of steam, and the boiling is continued for about half an hour. The filtered liquor is evaporated to dryness and ignited with access of the air. The ignited mass yields up to water stannate and sulphate of soda, which are separated from each other by their different degrees of solubility. Bayr. Ind. und Gewerbeblatt, Sept., 1869.

THALLIUM.

A new mineral, containing 17 per cent. of thallium, was discovered by Nordenskjold during a revision of the selenium minerals in the museum of Stockholm. It forms small, compact, lead-gray masses of metallic lustre, and consists of 45.76 copper, 17.25 thallium, 33.28 selenium, and 3.71 silver. The name Crookesit has been given to it. N. Jahrb. f. Ph., Nov. 1869, 298.

LEAD.

Litharge.—Chr. Rump, in dissolving litharge in acetic acid, found metallic lead remaining as residue. He determined its proportion as 0.9 per cent. Archiv d. Ph., Sept., 1869, 204.

A similar observation was made by Jul. Mueller, who found considerable quantities of metallic lead in litharge. Arch. d. Ph., Oct., 1869.

Wet Assay of Galena and other Lead Compounds.—Frank H. Storer discovered that galena when in contact with metallic zinc is readily decomposed by acids under evolution of sulphured hydrogen gas. This decomposition is peculiarly rapid when hydrochloric acid is used, but takes place also if oxalic, acetic, and sulphuric acids are employed. The author found that besides galena, almost any of the ordinary lead compounds are decomposed by metallic zinc in the presence of chlorhydric acid under precipitation of metallic lead, and he suggests this reaction as a means to estimate the lead in galena. Ch. N. A. R., May, 1870, 260.

BISMUTH.

A valuable lode of bismuth has been discovered near Balbamah, South Australia. Chem. N. A. R., Dec., 1869, 390.

Dr. Barth states having obtained from Peru a large sample of bismuth ore, which on being analyzed was found to contain in 100 parts, bismuth, 93.872; antimony, with a little tin, 4.570; copper, with a trace of iron, 2.058. Chem. N. A. R., Jan., 1870, 45.

ANTIMONY.

It is a well known fact that arsenic acid, when acted on by sulphuretted hydrogen, is reduced to arsenious acid, which is subsequently deposited as tersulphuret of arsenic. In view of the great similarity exhibited by antimony and arsenic, it was not improbable that antimonic acid would deport itself in like manner, viz., would be reduced to oxide of antimony (SbO^3), which subsequently would be deposited as tersulphuret of antimony, together with free sulphur. To decide this question, G. C. Wittstein instituted a series of experiments, from which he concluded that the deportment of antimonic acid to sulphuretted hydrogen is not analogous to that of arsenic acid, it being not reduced to oxide of antimony, but at once deposited as pentasulphuret of antimony (SbS^5). Arch. d. Ph., Dec., 1869, 214.

SILVER.

To reobtain the Silver from spent Photographic Baths.—Robinson precipitates the silver solution with oxalate of soda after it has been made alkaline with carbonate of soda. The precipitated oxalate of silver is desiccated and fused with an equal weight of carbonate of soda. Arch. d. Pharm., April, 1870, 75.

Silver, Nitrate of.—R. Palm revives for the preparation of nitrate of silver a method communicated already elsewhere. It is based on the observation that pure nitrate of silver is almost insoluble, and nitrate of copper readily soluble in concentrated nitric acid. He accordingly recommends to evaporate the silver solution to oily consistency, when strong nitric acid should be added, by which the silver nitrate is deposited and the copper

nitrate held in solution. It is unnecessary to remark that this method will not answer for the preparation of the silver nitrate on the large scale. *Pharmac. Zeitschr. f. Russland*, Aug., 1869.

Silver nitrate stains may be removed, according to M. Grimm, from woven cotton tissues, by first moistening them with chloride of copper, and subsequently washing with hypo-sulphite of soda, and lastly with pure water. Or, by applying dilute solutions of permanganate of potassa and hydrochloric acid, followed by washing with hyposulphite of soda solution, and rinsing in fresh water. *C. N. A. R.*, Oct., 1869, 287 from Exch.

Silver chloride can be used, according to E. Smith, in the form of a saturated ammonial solution, as a delicate reagent for free acids, organic as well as inorganic. Smith prepares the reagent in the following manner: Freshly precipitated and well-washed chloride of silver is mixed with ammonia till a clear solution is obtained. It is necessary to use chloride of silver in excess, and to separate it finally by filtration. The chloride of silver is precipitated from this solution even by the free carbonic acid contained in drinking-water. *N. J. f. Pharm.* xxx, 313.

Dr. Mierzinski effects the reduction of silver chloride in the following manner:

The completely washed and moist chloride is mixed with its double weight of liquor potassa of 1.25 spec. grav., with which it is heated to ebullition. Small quantities of glycerine are now added from time to time until the precipitate has turned black. After boiling yet for a few minutes longer, the whole is transferred to a filter, the precipitate first washed with water, then with hydrochloric acid, and finally again with water. It dissolves completely in nitric acid, and is perfectly free from copper. *Arch. d. Ph.*, May, 1870, 195.

Action of Light upon Chloride of Silver.—Prof. Morren exposed chloride of silver, contained in glass tubes, and suspended in chlorine water, to the action of solar rays, till it had assumed a black color. He then removed the tube to a dark room, and found that the black color disappeared, and the chloride of

silver turned completely white again. The so regenerated white chloride of silver was blackened once more on being exposed a second time to light, but it had evidently assumed a different structure. N. Jahrb. f. Pharm., July, 1869, 27.

Silver Fluoride.—George Gore communicates a paper on the composition and properties of fluoride of silver. According to him it consists of 19 parts of fluorine, and 108 parts of silver, and is obtained by treating pure silver carbonate with an excess of pure aqueous hydrofluoric acid. Fluoride of silver is usually in the form of yellowish brown, earthy fragments, but when rendered perfectly anhydrous by fusion, it is a black, horny mass, with a superficial satin lustre, due to particles of free silver. It is extremely deliquescent and soluble in water; its solution has an alkaline reaction. Ch. N. A. R., March, 1870, 152.

HYDRARGYRUM.

A new deposit of Quicksilver Ore has been recently discovered in the district of Sarawak, Borneo. A trial of a large quantity of this ore has been made and proved to yield from 70 to 80 per cent. of metal, whilst the average of mercury ores yet known,^{of} do not contain more than from 2 to 20 per cent. of metal. Ch. N. A. R., Jan., 1870, 37.

IRIDIUM.

The Oxide of Iridium yields upon glass and china, a black colored stain, of so intense and deep a tone of shade, that the other substances in use for that purpose are compared with this color of a brownish hue. Chem. N. A. R., Feb., 1837, 105.

PLATINUM.

Bright coatings of Platinum are produced on glass, porcelain, stoneware, &c., according to Prof. Böttger, by means of chloride of platinum, which has to be triturated with oil of rosemary until it is converted into a soft plaster-like mass. This, after being separated from the rosemary oil, is mixed with its quintuple weight of oil of lavender. The objects which shall

be platinized, are now painted over with this liquid, and carefully heated to dull redness, when they appear coated with a beautiful silvery lustre. *Viertelj. Schr. f. Ph.*, 1870, 39-41.

Prof. Bunsen published a new method for the separation of the platinum metals. *Ch. N. A. R.*, March, 1870, 153.

CHEMISTRY OF ORGANIC BODIES.

MONATOMIC ALCOHOL RADICALS.

METHYL AND ITS COMPOUNDS.

Methyl Alcohol.—Béchamps mentions that he obtained acetic acid in considerable quantities, by subjecting wood-spirit to fermentation, with a mixture of fresh mutton liver and powdered chalk. *N. Rep. f. Ph.*, 1869, 10, 636.

Methyl-Ethylic Ether a new Anæsthetic.—B. W. Richardson, in an abstract of papers read at the Med. Soc. of London, on March 14th and 21st, admitted that bichloride of methylene would not answer favorably the production of quick general anæsthesia. The author reviewed experimentally the action of the whole of the more promising anæsthetic fluids or vapors, including chloride of methyl, bichloride of methylene, chloroform, amylene, hydride of methyl-ethylic ether, methylic ether, and some others; and decided finally in favor of methylic ether. This compound is made by distilling methylic alcohol with sulphuric acid; the generated gas (methylic ether) after being washed in strong potassa solution, is passed in conc. ethylic ether, which acts as a solvent. This solution is Richardson's methyl-ethylic ether, of which from one to two drachms are sufficient for quick narcotization. *Am. Jour. of Ph.*, July, 1870, 333, from the *Med. Press and Circular*, Dublin, 1870.

Chloroform.—Hager, in publishing his observation as to the conditions under which chloroform undergoes decomposition, comes to the following conclusions:

1. Chloroform does not decompose if acted on by light only.
2. It decomposes rapidly under the combined influence of

air and solar rays. The products of decomposition are hydrochloric acid, carbonylchloride, formic, and traces of oxalic acids; in some cases also free chlorine.

3. Chloroform decomposes even in the dark, if air has access to it, although this effect takes place slower and later.

4. An admixture of from 0.75—1 per cent. of alcohol suffices to preserve it, and prevents its decomposition.

5. Commercial chloroform contains besides chloroform, other chlorinated compounds, which are difficult to separate from it.

Hager tests chloroform in which commencing decomposition is suspected in the following way: He rinses a test-tube with dilute ammonia, and approaches to its mouth with the chloroform in such a manner, that its vapor only, or perhaps a few drops, are falling into it. White sal ammoniac fumes make their appearance if the chloroform is already decomposing. To test for acidity he agitates the chloroform with water, containing a small quantity of tincture of litmus. Hager's Pharm. Central H., x, Jahr., No. 28.

Detection of Alcohol in Chloroform.—M. Blancher suggests the following mode: Add to the suspected chloroform a small piece of caustic potassa, and leave the fluid at rest for a few minutes; then add distilled water, and shake the chloroform therewith. Decant the water and add a solution of a copper salt to the aqueous fluid, when a precipitate will ensue if the chloroform has contained alcohol. Chem. N. A. R., Dec., 1869, 372.

Hager makes use of Lieben's iodoform test for the detection of alcohol in chloroform. His modus operandi is as follows: One or two c. c. chloroform, mixed with five to ten c. c. water, are heated in a long test-tube to about 30° or 40° C. After violent agitation, the liquid is passed through a moistened filter, and the filtrate mixed with a superiodated solution of iodide of potassium. Liquor potassa is then gradually added, until the brown color of the mixture disappears. A crystalline deposit of iodoform will make its appearance after twelve or twenty-four hours' standing; the shape of these crystals may be recognized under the microscope. Pharm. Centr. H., 1870, 154.

ETHYL AND ITS COMPOUNDS.

Nitrous Ether.—C. J. Rademaker noticed that bicarbonate of potassa, when kept in sweet spirits of nitre, decomposes the latter under formation of nitrite of potassa. Am. J. of Ph., March, 1870, 106.

Test for Alcohol.—A. Lieben states that the following reaction affords the means of detecting small quantities of alcohol:

A small portion of the suspected liquor is introduced into a test-tube, with some grains of iodine and a few drops of caustic soda. The mixture is heated slightly, but without boiling; if alcohol is present, a yellowish crystalline precipitate of iodoform is deposited. He avers that $\frac{1}{1000}$ th of alcohol dissolved in water, can be thus detected. According to him, alcohol can be detected in the urine after drinking alcoholic liquids; he always could detect it in the first portions of the distillate. Am. J. of Ph., March, 1870, 176, from exchanges.

The very first portions of the distillate obtained in the production of alcohol from high wines are characterized by a peculiar odor, which indicates the presence of aldehyde. In a well-conducted establishment the quantity of this aldehyde-containing liquid is very small, and amounts to not more than 2 parts for every 80,000 parts of high wines. G. Krämer and A. Pinner subjected these first runnings to fractional distillation, and found besides aldehyde and alcohol a substance which exhibits a very pungent odor, and dissolves in water, but does not mix with it. They noticed, also, that the residue remaining in the retort after the distillation had been completed, was a brown oily body containing a basic compound in combination with acetic acid. Some high wines (made from molasses) contain, besides aldehyde and acetal, a liquid which boils at 76–78° C., and is miscible with water. N. Rep. f. Ph., 1869, 11, 660.

Alcoholic Fermentation.—Two theories have been advanced to explain the nature and philosophy of the fermentation process. Liebig's explanation, up to this date most universally adopted, is to the effect that the decomposition of sugar during fermentation into alcohol and water, is produced by the molecu-

lar motion existing in the yeast plant which is communicated to the sugar-molecules, whereby they are induced to break up and resolve into simpler compounds. Pasteur, on the other hand, argued that fermentation was a chemical process depending on the growth of the ferment itself, and that sugar was actually the food which promotes its development.

After a lapse of nine years Liebig comes forward again, and shows not only the incorrectness of Pasteur's views, but gives also numerous hitherto unknown data bearing on the nature of fermentation. We extract from his lengthy memoir the following :

The ferment, consisting of an azotized substance, and containing sulphur and a considerable quantity of phosphates, requires these elements and compounds for its propagation ; hence it is difficult to see how fermentation should take place if pure yeast is added to a solution of perfectly pure sugar ; numerous instances of fermentation without sugar are known, thus : malate of lime, when mixed with yeast, will undergo fermentation ; salicin can be split up into saligenin and salicylous acid by fermentation, &c. Numerous similar decompositions plainly show that a physiological process does not take place. On the other hand, the transformation of cane sugar into glucose, when in contact with yeast, illustrates the transfer of molecular motion, which is very clearly also noticed in the peculiar action of aldehyde upon cyanogen. Very small quantities of the former, in itself a very unstable compound, influence the cyanogen to combine with the elements of water, whereby oxamide is produced.

The yeast analyses of different chemists do not agree in their results : Mitscherlich found 47 per cent. of carbon, and 10 per cent. of nitrogen ; Schlossberger, 50 per cent. carbon, and 12 per cent. nitrogen. Experiments instituted in Liebig's laboratory resulted in obtaining 34.57 per cent. carbon, and 7.41 per cent. nitrogen. This variance in composition demonstrates the instability of the fermenting matter, which is exhibited also by the changeable percentage of its other constituents, sulphur and inorganic compounds. The spontaneous decomposition of yeast

can be noticed if it is kept in a cool place, in form of a thick magma, and covered with a little water, when carbonic acid begins to be evolved and alcohol is generated in the liquid. This phenomenon is due to a real fermentation process which the yeast itself undergoes. Pasteur made the observation that very small quantities of sugar subjected to fermentation with much yeast, would yield more alcohol than the proportion which could have been produced from the added sugar. He concluded, therefore, that this excess of alcohol must have been generated from the yeast itself, and assumed that the ferment-plant, being at first developed by the addition of sugar, finally suffers destruction by living on its own material. Liebig now shows that yeast, in undergoing fermentation without an addition of sugar, is not destroyed, and that its cells are neither diminished nor do they disappear, a fact proved also by the microscopical examinations of Nägeli, who found that yeast cells, after they had undergone fermentation, were in size and shape equal to those of common yeast.

The author then proceeds to show that yeast, when subjected to fermentation with sugar-water, parts with certain azotized principles, for an estimation of nitrogen before and after the completion of the process proved that its quantity had decreased. If yeast which had passed through fermentation was separated from the liquid in which it had been suspended, and was added, after careful washing with pure water, to fresh sugar solution, it was noticed that a second fermentation was started, but it did not work quite as energetically as before, and ceased entirely to operate after repeating this manipulation three or four times.

In summing up Liebig says: Leaving all mere opinions aside, our real knowledge as to the composition of yeast and its action may be expressed as follows: Yeast consists of vegetable cells, which are developed and propagated in a liquid containing sugar and an albuminate, or a substance generated from an albuminate. The largest proportion of the material which is contained in the cells consist of a substance rich in nitrogen and sulphur, and a carbohydrate or sugar.

A molecular motion sets in as soon as the yeast is fully de-

veloped. This motion causes a rearrangement of those substances which form constituents of the cellular contents. The carbohydrate (or sugar) in the cells decomposes into carbonic acid and alcohol, whilst a small portion of the sulphur and nitrogen-containing constituents is rendered soluble, and remains in the molecular movement imparted to it at first. This substance has the property, in consequence of this motion of its atoms, to convert cane sugar into glucose. *Sitzungber. der. k. b. Akad. d. Wiss. zu München*, 1869, p. 323-368.

Etherification by Hydrochloric Acid.—Friedel made some experiments (*N. Rep. f. Pharm. Bd. 19*, 755) to ascertain the role performed by hydrochloric acid in the production of compound ethers from an organic acid and one of the alcohol bases, and came to the conclusion that an acichloride is formed, which, by its reaction upon the elements of alcohol, produces the compound ether and muriatic acid. Fr. Mohr shows now in the *N. Rep. f. Pharm. Bd. 19*, that this process is not so complicated, and consists simply in an abstraction of water, caused by the anhydrous hydrochloric acid gas, which itself is converted in dilute acid.

PROPYL AND ITS COMPOUNDS.

Synthesis of Normal Propylic Alcohol.—Rossi succeeded in the following manner, by starting from ethyl-alcohol, to produce propylic alcohol: he converted chloride of ethyl into cyanide of ethyl, and the latter compound, by means of well-known methods, into propionic acid. From the lime salt of that acid propionic aldehyde is obtained, and this latter converted by hydrogenizing into propylic alcohol.

Propylic alcohol boils, according to Rossi, at 96° ; its specific gravity at 0° is 0.8205. The author describes various propyl compounds as for instance, bromide of propyl = $C_6H'Br.$; iodide of propyl = $C_6H'I$; acetate of propyl = $\left. \begin{matrix} C_4H_3O^2 \\ C_6H' \end{matrix} \right\} O^2$

Comptes Rend., Jan. 17, 1870.

AMYL AND ITS COMPOUNDS.

The composition of raw Fusel Oil has been studied by G.

Krämer, and A. Pinner, who think they have discovered in it, besides ethylic and amylic, also propylic and butylic alcohol. N. Rep. f. Ph., 1869, 11, 662-665.

Amylic Alcohol.—Kemper noticed the formation of chlorine-containing products by subjecting a mixture of chloride of lime, amylic alcohol, and water to distillation. These compounds are heavier than water and soluble in amylic alcohol. Archiv d. Ph., 139, p. 20.

CAPRYL AND ITS COMPOUNDS.

The Oil of Curcas Purgans, a plant growing in Africa, has similarity with castor oil. R. D. Silva prepared from it octyl-alcohol (capryl alcohol) in the same manner in which it can be obtained from castor oil. Arch. d. Ph., May, 1870, 262, from Compt. Rend.

PHENYL AND ITS COMPOUNDS.

Sulpho-carbolic Acid and Sulpho-carbolates.—The properties of these compounds were studied by T. Omar Guy; the soda-salt having been used in medical practice, its mode of preparation is given. Am. Jour. of Ph., May, 1870, 211.

Formerly all sulpho-phenates (sulpho-carbolates) were prepared by starting from the baryta salt. To avoid this expensive mode of manufacture, attempts have been made to prepare them by directly saturating the crude acid (formed by mixing two volumes of carbolic acid with one volume of oil of vitriol in a glass flask, and heating the mixture to 290° F. for five minutes, allowing it to cool, and diluting with six or eight volumes of water) with the bases or their carbonates, and depending on crystallization to purify them. A description of the preparation of the soda, zinc, lead, lime and quinia salts is contained in the March number of the Am. J. of Ph., 1870, p. 135.

Dr. Hager mentions in his "Pharmac. Central Halle," No. 1, 1870, that when sulphuric acid and phenol (carbolic acid) are mixed together, there remains always a surplus of about 10 per cent. of uncombined sulphuric acid, no matter how long the digestion may have been continued, even at the elevated temperature

of 125° F. In this same number he gives a minute description of the modus operandi for preparing sulpho-phenate of zinc.

Aniline Colors.—Commercial rosanilin is frequently used for coloring liquors, candy, syrups, even raspberry syrup, and as arsenic acid is used for its preparation it appeared sufficiently important to determine if this substance is fully separated from it by washing, &c., during its process of manufacture. Dr. Rieckher succeeded indeed in proving the presence of arsenic in samples of rosanilin obtained from two different factories. To decide whether it adheres to rosanilin (fuchsin) as arsenious or arsenic acid, he took advantage of the volatility of arsenious acid in hydrochloric acid vapors, by subjecting fuchsin mixed with chloride of sodium and sulphuric acid to a process of distillation. Arsenic acid is under such circumstances not acted on and remains in the residue. Thus he found in one sample of fuchsin 2.073 per cent. arsenious acid and 4.803 per cent. arsenic acid; the other sample contained 4.803 per cent. arsenic acid, and only 0.697 arsenious acid. *Viertelj. Schr. f. Pharm.*, 1870, 216–240.

THYMYL.

Thymol.—Bouilhon recommends thymol as an antiseptic for surgical operations in place of creasote and carbolic acid, whose unpleasant odor is frequently objected to.

Thymol= $C_{10}H_{14}O_2$ is obtained by treating the volatile oil of thyme with caustic soda or potassa solution, by which it is freed from the hydrocarbons of the oil. An addition of a mineral acid to the alkaline solution separates the thymol, which may be purified by a subsequent distillation. *Arch. d. Pharm.*, Sept., 1869, 257, from exchanges.

NAPHTHYL.

Naphthalin.—H. Vohl describes a method for the preparation of this substance on a large scale, and publishes some interesting properties of it.

Melted naphthalin absorbs a large quantity of atmospheric air, which is given off in cooling. This absorbed air is according to Vohl richer in oxygen than atmospheric air. Indigo dissolves

in melted naphthalin with great facility. Various other compounds are equally well soluble in it as, for instance, the sulphides of arsenic, tin, and antimony. It also dissolves phosphorus, sulphur, iodine, oxalic, benzoic, and succinic acids, &c. Journ. Applied Chemistry, Sept., 1869.

POLYATOMIC ALCOHOL RADICALS.

METHYLEN.

Bichloride of Methylene, recommended by Dr. Richardson as an anæsthetic, has produced alarming symptoms in two cases, and death in one instance, in consequence of its administration. It is asserted also that bichloride of methylene is less adapted than chloroform for prolonged operations. Dental Cosmos, Dec., 1869, from exchanges.

OXALYL.

Oxalic Acid dissolved in a large quantity of water is, according to G. Bizio, gradually oxidized by the atmospheric oxygen to carbonic acid. Zeitschrift f. Chemie, 1870, 26.

Synthetic Production of Oxalic Acid.—E. Drechsel produced oxalic acid by passing carbonic acid over molten metallic sodium. Chem. Centralblatt, No. 21, 1869.

The acid liquors obtained in the preparation of garancin from madder root contain considerable quantities of oxalic acid, which can be made available, according to Pernod, by an addition of and digestion with hydrated lime. The free oxalic acid contained in the liquid combines with the lime, and is separated from it afterwards by treating it in the usual manner with sulphuric acid. Dingl. Polyt. Journ., März, 1870, 478.

GLYCERYL.

Glycerine.—Dr. Th. Koller recommends glycerine as a preserving fluid for anatomical preparations or zoological specimens in place of alcohol. N. Jahrb. f. Pharm., May, 1869.

According to Klever 100 parts of glycerine dissolve of:

Arsenious Acid, . . .	20.00	parts.	Potassa Chlorate, . . .	3.50	parts.
Arsenic " . .	20.00	"	" and Iron Tartrate, . .	8.00	"
Benzoic " . .	10.00	"	Potassium Cyanide, . .	82.00	"
Boracic " . .	10.00	"	Tartar Emetic, . . .	5.50	"
Oxalic " . .	15.00	"	Potassium Bromide, . .	25.00	"
Tannic " . .	50.00	"	" Iodide, . . .	40.00	"
Alum, . . .	40.00	"	Morphia, . . .	0.45	"
Ammonia Carbonate, . . .	20.00	"	" Acetate, . . .	20.00	"
Sal Ammonia, . . .	20.00	"	" Muriate, . . .	20.00	"
Atropia, . . .	8.00	"	Soda Arseniate, . . .	50.00	"
" Sulphate, . . .	88.00	"	" Bicarbonate, . . .	8.00	"
Barium Chloride, . . .	10.00	"	" Carbonate, . . .	98.00	"
Brucia, . . .	2.25	"	Phosphorus, . . .	0.20	"
Quinis, pure, . . .	0.50	"	Lead Acetate, . . .	20.00	"
" Tannate, . . .	0.25	"	Sulphur, . . .	0.10	"
Cinchonia, . . .	0.50	"	Strychnia, . . .	0.25	"
" Sulphate, . . .	6.70	"	" Nitrate, . . .	4.00	"
Copper, Acetate, . . .	10.00	"	" Sulphate, . . .	22.50	"
" Sulphate, . . .	80.00	"	Veratria, . . .	1.00	"
Iron Lactate, . . .	16.00	"	Zinc Chloride, . . .	50.00	"
" Sulphate, . . .	25.00	"	" Iodide, . . .	40.00	"
Sublimate, Corrosive, . . .	7.50	"	" Sulphate, . . .	85.00	"
Iodine,	1.90	"	(Pharmac. Zeitschr. f. Russl.)		

Glycerine Insoluble in Chloroform.—It is stated in Watt's Dictionary (vol. ii, p. 887), that glycerine dissolves in all proportions in chloroform, and this alleged solubility is suggested (Chem. N., vol. viii, p. 227) as a means of detecting an adulteration of this article with cane-sugar or glucose, which, on account of their insolubility in chloroform could be detected and estimated. H. N. Draper has demonstrated now by experiments that glycerine is merely miscible with chloroform, but wholly insoluble in it, even at an elevated temperature. Ch. N. A. R., May, 1870, p. 232.

Nitro-Glycerine.—In the manufactory of M. Mobray, about 150 litres (38 gallons) of nitro-glycerine are produced daily. The apparatus employed is a large horseshoe reservoir, of about three feet in height, and fifty feet in length, which is filled with a refrigerating mixture of ice and common salt. In this tank are placed stoneware vessels of 4 to 5 litres capacity. The mixture of nitric and sulphuric acids is poured into the vessels,

and the glycerine made to enter, drop by drop, from a reservoir. The mixture is agitated by cold air, which enters from a reservoir, through a glass tube used by the workmen as an agitating rod. Forty-two kilogrammes of glycerine yield ninety-four kilogrammes of nitro-glycerine. *Pharm. Journ. and Transac.*, Nov., 1869, 290.

VEGETABLE FATTY SUBSTANCES.

Croton Oil.—The volatile acids of croton oil, according to A. Geuther, are mainly acetic, butyric, and valerianic acids, probably some oenanthyllic acid, and of the oleic series, perhaps pyrotorebinic and higher acids. A liquid acid $C^8H^6O^4$ (Schlippe's crotonic acid) does not occur in croton oil, nor is its solid acid identical with angelicic acid, with which, however, it agrees in composition, $C^{10}H^8O^4$. This tiglinic acid constitutes more than one-third of the volatile acids of croton oil. *Am. J. of Ph.*, July, 1870, from *Zeitschr. f. Ch.*, 1870.

ANIMAL FATS.

Cod-liver Oil.—W. Procter, Jr., gives in the May number of the *Am. J. of Ph.*, page 215, an interesting account of the manner in which the codfish is caught, and describes the mode of preparation of cod-liver oil as carried on at Portsmouth, N. H.

Cod-liver Cream.—The May number, 1870, of the *Am. J. of Ph.*, contains the following directions for its preparation: Mix equal quantities of cod-liver oil and mucilage of gum tragacanth (one-quarter of an ounce of gum to sixteen ounces of water), sweeten, and add for every ounce of the mixture one drachm of spirit of wine, and one drop essence of lemon, the same quantity essence of almonds, and a trifle of oil of cassia.

Cod-liver Oil.—C. Schaper subjected a sample of cod-liver oil brought into commerce from Labrador to chemical examination, and found it consists mainly of elaiidin and palmitin, with small quantities of stearine. The basis of these compounds is glycerine. The proportion of iodine in this cod-liver oil was determined by Schaper as 0.015 per cent. He also ascertained in it the existence of traces of ammonia, trimethylamin, and

small quantities of acetic and butyric acids. *Vierteljahresschr. f. Prakt. Ph.* von Wittstein, B. 18, 370.

Soaps.—According to C. H. Wood, the soap used in the preparation of linimentum saponis should be as rich as possible in oleate of soda. Even white castile soap is not fully soluble in cold rectified spirit, whereby the presence of margarates is demonstrated. This circumstance induced him to prepare a pure oleate of soda soap, and he suggests almond oil as material best adapted for this purpose.

Wood effects the saponification of the almond oil by first agitating it with conc. sulphuric acid, and after having subsequently added the liq. sodæ, he applies heat. The soap forms readily, and separates on cooling from the saline liquor; it is then placed on calico, dried, cut into pieces, and kept for use.
Am. J. of Ph., May, 1870, 268.

MONATOMIC ACID RADICALS.

ACETYL.

Glacial Acetic Acid.—Fr. Rüdorff suggests, for ascertaining the strength of glacial acetic acid, to observe its solidifying point, which, with pure acid, is 16.7° C. Glacial acetic acid, according to this author, can be cooled down to 10° , or even 8° C., without solidifying, but solidification takes place at once on introducing a small bit of solid acid into the liquid. The temperature rises then at once to 16.7° C. Mixtures of glacial acid and water require a considerably lower temperature for solidification. This deportment enabled the author to construct the following table:

100 parts acetic acid mixed with:	100 parts mixture con- tains:	Solidifying point:
0.0 water.	0.0 water.	+16.7° C.
0.5 "	0.497 "	15.65 "
1.0 "	0.990 "	14.8 "
1.5 "	1.477 "	14.0 "
2.0 "	1.961 "	18.25 "
3.0 "	2.912 "	11.95 "
4.0 "	8.846 "	10.5 "
5.0 "	4.761 "	9.4 "
6.0 "	5.860 "	8.2 "
7.0 "	6.542 "	7.1 "
8.0 "	7.407 "	6.25 "
9.0 "	8.257 "	5.8 "
10.0 "	9.090 "	4.8 "
11.0 "	9.910 "	8.6 "
12.0 "	10.774 "	2.7 "
15.0 "	18.048 "	— 0.2 "
18.0 "	15.824 "	2.6 "
21.0 "	17.355 "	5.1 "
24.0 "	19.854 "	7.4 "

Admixtures of sulphuric acid or alcohol alter the solidifying point of an aqueous mixture of glacial acetic acid. Dingl. Polyt. Journ., June, 1870, 545.

Pyroligneous Acid contains, according to M. Barre, besides acetic, several others of the series of fatty acids, viz., formic, propionic, butyric, valerianic, and caproic acids. Chem. N. A. R., Nov., 1869, 279.

Solution of Acetate of Alumina, used as a gargle in sore throat, wash for wounds and scorbutic gums, is obtained by precipitating a solution of 80 parts sugar of lead in 240 water, by a solution of 50 parts ammonia-alum and 10 sulphate of soda in 400 hot water; after setting aside for 24 hours in a cool place the filtered liquid is ready for use. Am. J. Pharm., Sept., 1869, from exchanges.

Chloral= $C^4Cl^3O^2$ has been recommended by Dr. Oscar Liebreich as a new hypnotic and anæsthetic. The author made numerous experiments with it on rabbits and frogs, and a few also on the human subject. Chloral is soluble

in water in all proportions, and if a small quantity of such an aqueous solution was administered by subcutaneous injection to a rabbit, the animal was thrown into a tranquil sleep of some hours' duration. Pharm. Journ. and Transact., Sept., 1869, 150.

Dr. Liebreich suggests, for the administration of chloral-hydrate, the following formulæ:

1. As an ordinary hypnotic.

R. Hydratis Chlorali,	grana xxxviii.
Mucilaginis Acaciæ,	
Aquaæ Distillatae,	aa f $\frac{3}{4}$ v.
Fiat haustus.	

2. As a sedative.

R. Hydratis Chlorali,	gr. xxx.
Syrupi Aurantii,	
Mucilaginis Acaciæ,	aa f $\frac{3}{4}$ v.
Aquaæ Distillatae,	f. $\frac{3}{4}$ v.

Fiat mistura cujus sumat cochleare magnum omni quaque hora.

Dr. B. W. Richardson made a report on a series of experiments made by him on animals with chloral. In pigeons he had found chloral to produce sleep and insensibility, lasting from four to five hours, by the use of from one and a half to two grains of chloral, and that above that quantity it would kill. He thought that perfect anæsthetic insensibility could not be produced unless the dose was increased to a dangerous extent. Dental Cosmos, Nov., 1869, 607.

Dr. Liebreich points out strychnia as an antidote to chloral, and also established the fact that chloral diminishes the effects of strychnia, provided it is given very promptly after the exhibition of the poisonous alkaloid. Am. J. of Ph., May, 1870, 248, from exchanges.

Dr. Rieckher gives the following tests for pure chloral-hydrate (N. Jahrb. f. Ph., Jan., 1870, p. 15): It has a peculiar odor and taste, is dry and colorless, dissolves clear in its own weight of water, fuses when heated on platinum foil, and evaporates without residue and without taking fire; the aqueous solution is not changed by nitrate of silver; agitated with colorless con-

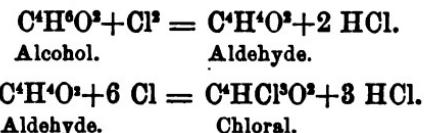
centrated sulphuric acid, it becomes turbid without coloration even on being heated; acidulated with sulphuric acid and faintly tinged with permanganate of potassa, no decolorization takes place in two or three hours; nitric acid of 1.2 sp. gr. does not act upon it in the cold or when heated. Hager, in his Pharm. Central Halle, 1870, 9, 10, states having met with an adulterated article of chloral-hydrate. No. 21 of the Pharm. Zeitung also contains an item complaining of falsified chloral-hydrate being manufactured by Roussin, of Paris, and containing 23.7 per cent. of alcohol. Am. J. of Ph., May, 1870, p. 239.

Hager recommends for the detection of alcohol in commercial chloral-hydrate Lieben's iodoform test. Pharm. Centr. H., 1870, 155.

Liebig's mode for the preparation of chloral is too well known to be quoted here once more. This is less the case with the method adopted by Städeler, which is as follows: 7 parts of muriatic acid are gently heated with 1 part of starch until the paste is converted into a liquid; 8 parts black manganese and a little table salt are then added; the mixture is rapidly heated to boiling, when the fire is at once removed. The mass foams considerably, giving off carbonic acid, and continuing to boil for some time. After boiling ceases, heat is again applied until the distillate ceases to be rendered turbid by strong potash lye. The oily drops floating upon the surface are carefully removed, the liquid is saturated with table salt and distilled, the distillate being again carefully freed from an odorous sulphur-yellow oil. The distillation over table salt is repeated several times, to obtain a concentrated aqueous solution of chloral, which is saturated with chloride of calcium and rectified from an oil bath, when the hydrate distils as a colorless liquid, which soon congeals. On mixing the hydrate with four times its volume of sulphuric acid, chloral is separated as a colorless liquid, which is freed from muriatic acid by slow boiling. This purified chloral, mixed with water, yields pure hydrate of chloral. Am. J. of Ph., March, 1870, from exchanges.

The formula of chloral indicates that it is the chlorine derivative of aldehyde, and that the first action of chlorine upon

alcohol consists in removing two atoms of hydrogen, liberating aldehyde, which, by a substitution change is then converted into chloral:



It was found, however, that when aldehyde is subjected to the action of hydrochloric acid gas, two molecules of it are deprived of the elements of water, and crotonic aldehyde results:



The hydrochloric acid resulting from the first part of the action, therefore, attacked the free aldehyde and produced this change. By the further action of chlorine upon this crotonic aldehyde, a chlorine derivative was obtained having the composition $\text{C}^8\text{H}^3\text{Cl}^5\text{O}^2$. Whether this body possesses the same medicinal properties as the ordinary chloral has not been determined. Pharm. Journ. and Trans., May 1870, 721. Kohlmann describes (N. Rep. f. Pharm., Bd. 19, 35), the arrangement of an apparatus for the preparation of chloral, and states that daylight is absolutely required for its production, because the chlorine does not react upon alcohol at night. He obtained 200 grammes chloral from $2\frac{1}{2}$ pounds alcohol.

The yield of chloral hydrate, according to J. Thompson (N. Rep. f. Pharm., Bd. 19, 52), is 130–140 per cent. of the weight of alcohol, and the quantity of chlorine required four or five times its amount.

Dr. Liebreich advanced, in reference to the operation of chloral, the theory that it decomposes into chloroform and formate of soda, and that this decomposition is effected by the alkalinity of the blood. Personne has now demonstrated experimentally (Journ. de Chem. et de Pharm., Jan., 1870), the correctness of this theory.

Bromal Hydrate.—E. Steinauer investigated the effect of this compound upon the animal organism, and found its operation somewhat similar to that of chloral hydrate. N. Rep. f. Ph., Bd., 19, 55, from Sitz, Ber. d. Chem. Ges., Berlin.

Propionic acid, together with formic, butyric, valerianic, and capronic acids, are produced during the dry distillation of wood for the production of pyroligneous acid. *Comptes Rendus*, vol. lxviii, p. 1222.

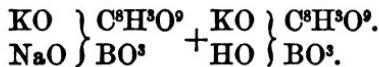
Valerianic Acid.—The boiling-point of pure monohydrated valerianic acid is 175° C.; commercial acid, however, usually begins to boil at 100° C., as found by C. Schacht.

The same author determined the percentage of bismuthous oxide contained in various samples of bismuth valerianate, and found it varied from 61.99 per cent. to 83.09 per cent. He attributes this discrepancy to the circumstance that commercial valerianic acid must have been used for its preparation. *Archiv d. Ph.*, Sept., 1869, 193.

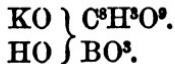
POLYATOMIC ACID RADICALS.

TARTRYL.

Tartarus Boraxatus.—O. F. W. Dure studied the composition of the tart. boraxat. of the German Pharmacopœia, and argues the existence of two coupled acids, which he denominates *monoborotartaric* and *diborotartaric acid*. According to his views the tartarus boraxatus of the Ph. Germ. is:



And the crème de tartre soluble Ph. gallic:



He found that boracic acid, when boiled with a solution of tartaric acid, transforms a large portion of the latter into the monobasic *isotartaric acid*, but does not enter into combination with it. *Vierteljahres Schrift. f. pr. Ph. B.*, 18, 321.

Tartar Emetic.—The method recommended for the discovery of arsenic in tartar emetic, which consists in heating the latter until complete carbonization ensues, when the characteristic odor of arsenic should appear, is according to C. Rump not

fully reliable. He found that pure tartar emetic, on being subjected to the same treatment, gave also rise to a peculiar odor, which might have been mistaken for that of arsenic, whilst, on the other hand, an intentional admixture of arsenious acid did not produce a very marked proportional effect. Archiv d. Ph., Sept., 1869, 203.

W. Stromeyer states that the presence of arsenic in tartar emetic can be readily ascertained by introducing sulphuretted hydrogen into a solution of 2 parts tartar emetic in 115 parts pure hydrochloric acid of 1.124 spec. grav., when arsenic sulphide is precipitated, whilst antimony remains in solution, provided the proportion of hydrochloric acid has been sufficient. Ibidem.

Tartaric acid and cream of tartar are, according to observations of R. Mirus, always contaminated with small quantities of lead. Pharm. C. Halle, Dec., 1869, 51.

ORGANIC ACIDS.

Piperinic Acid.—Rud. Fittig and W. H. Mielk studied the properties and deportment of piperinic acid when treated with various chemicals. A solution of the acid when mixed with permanganate of potassa, yields on distillation a beautifully crystallizing body, exhibiting the agreeable odor of Coumarin, which the authors call piperonal, assigning to it the formula $C_8H_8O^3$. Zeitschr. f. Chemie, 1869.

HALOID RADICALS.

CYANOGEN.

Prussic Acid.—Dr. Scouttetenn has examined a process suggested by the late Professor Schoenbein for the detection of small traces of prussic acid. It consists in exposing slips of a test-paper, previously soaked in an alcoholic solution of gum guaiac, and afterwards in an aqueous solution of sulphate of copper, to the action of minute quantities of prussic acid vapor, when

it will instantly turn blue. The paper need only be placed on the unstoppered neck of a vial containing a liquid in which small quantities of prussic acid are diffused, and the blue color will at once become visible. *Pharmac. Journal and Transactions*, August, 1869.

Ferricyanide of Potassium—E. Reichard uses bromine in place of chlorine with great advantage for the preparation of ferricyanide of potassium from the yellow prussiate. *Arch. d. Pharm.*, April, 1870, 48.

ORGANIC BASIC COMPOUNDS.

CINCHONA—ALKALOIDS.

Quinia.—Dr. Kerner investigated the change effected by an admixture of potassium permanganate to a solution of quinia. He noticed that a new compound is produced, which he denominated dihydroxyl of quinia. According to him, the composition of this substance is represented by the formula $C^{20}H^{20}N^2O^4$, and its formation from quinia is shown by the following equation : $C^{20}H^{24}N^2O^4 + H^2O + O = C^{20}H^{20}N^2O^4$.

Dihydroxyl of quinia is a crystalline body, difficultly soluble in cold water and alcohol, but more readily in these fluids when hot. *Ch. N. A. R.*, Jan., 1870, 36.

Louis Strehl examined a sample of quinia which bore the label, "Light Sulphate of Quinia," and was manufactured by Lord Bros., Ludgate Hill, London. He found it did not contain any quinia at all, but consisted of hydrochlorate of cinchonia, which in appearance closely resembles the sulphate of quinia. *Chicago Pharmacist*, March, 1870.

M. Panot heats, for the purpose of ascertaining the presence of *salicine* in sulphate of quinia, the suspected article in a small flask with a mixture of dilute sulphuric acid and bichromate of potassa solution. The products of distillation are condensed in a small quantity of distilled water. After the reaction has ceased, a few drops of sesquichloride of iron solution are added to the distillate, when a violet color makes its appearance if the

article was adulterated with salicine. *Bulletin Mensuel de la Soc. Ch., Paris, March, 1869.*

Cinchonia.—The action of permanganate of potassa upon cinchonia has been studied by Caventou and Willm. The products are (1), an indifferent neutral compound, named by the authors, cinchotanine; (2), a crystallized acid, called carboxy-cinchonic acid; (3), a substance which reduces the copper from Trommer's test; and (4) a new alkaloid, denominated by the authors, hydrocinchonine. *C. N. A. R., Oct., 1869, 242*, from *Comptes Rendus*.

Citrate of Quinoidine.—Julius Jobst recommends a scale preparation of citrate of quinoidine as a substitute for quinia, in intermittents, and thinks it much preferable to the ordinary preparations of quinoidine. *N. Rep. f. Ph., 1869, 10, 603.*

ALKALOIDS OF OPIUM.

Narceina.—Solid narceina is turned blue by free iodine, according to W. Stein, like starch. Much iodine turns narceina brown, but if water is now added and the excess of iodine removed by ammonia, the blue color appears. An excess of ammonia, like all substances which dissolve narceina, prevents the reaction. *Am. J. of Ph., May, 1870, 221*, from exchanges.

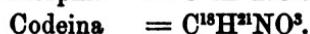
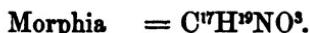
Mekonidina, Lauthopina, Laudanina, and Codamina.—The alkaloid porphyroxina was supposed to be the constituent of opium which imparts a rose-red color to acids. O. Hesse asserts now that this substance is a mixture of several basic compounds, and that the property in question belongs to only one of them, which he denominates mekonidina.

If an aqueous solution of opium is precipitated with an excess of soda or lime, and the supernatant liquid agitated with ether, the mekonidina, together with a few other bases, passes into the ethereal solution, from which they can be separated by shaking with acetic acid. If the acetous solution is poured into dilute caustic soda or potassa, a flocculent resinous precipitate is generated, containing the alkaloids thebaina and papaverina, while the alkaline liquid holds a number of bases in solution, amongst

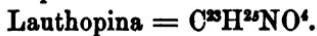
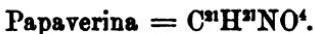
which mekonidina is the most important one. They are separated, according to Hesse, in the following manner: The alkaline liquid from which the precipitate (thebaina and papaverina) has been separated by filtration, is supersaturated with hydrochloric acid, and finally mixed with ammonia. This mixture is now treated with chloroform, without previously filtering it. The chloroform holding all the various bases in solution is agitated with acetic acid, and the obtained acid solution, after having separated it from the chloroform, accurately neutralized with ammonia. This causes a deposit, which is principally lauthopina. This is separated by filtration, and the filtrate mixed with caustic potassa, whereby some codeina is precipitated, rendering the liquid turbid. This compound is fully extracted from the alkaline mixture by repeated agitations with ether. The other four bases which are dissolved in the alkaline liquid are not taken up by the ether until they are liberated by an addition of sal ammoniac. The ethereal solution thus obtained yields by evaporation different crops of crystals, the first one of which is the laudanina, while codamina, mekonidina, and a basis which Hesse simply designates with the letter x, are obtained by subsequent crystallizations.

These alkaloids exhibit very striking reactions with acids; their deportment with caustic alkalies and ammonia is equally characteristic, and is described at great length by the author, who furnishes also the results of a number of elementary analyses whereby the composition of these new alkaloids is established. Mekonidina is represented by the formula, $C^{21}H^{28}NO^4$; laudanina by $C^{20}H^{26}NO^3$; codamina by $C^{19}H^{23}NO^3$; lauthopina by $C^{23}H^{26}NO^4$.

Hesse calls attention to the interesting circumstance that codamina and laudanina form with morphia and codeina a series of homologous compounds, which differ from each other by $x\ CH^2$, viz.:



A second group of homologous opium bases includes papaverina and lauthopina, viz. :



The opium contains only small proportions of these new basic compounds. Hesse found in a Turkey opium, with 8.3 per cent. of morphia, only 0.0058 per cent. lauthopina, 0.0052 laudanina, and 0.0033 per cent. codamina.

The author studied also the properties of thebaina, of which he was able to prepare a number of well-crystallizable salts, which was rather unexpected, as Anderson had stated that solutions of thebaina in acids would not form any crystals. An aqueous solution of chlorhydrate of thebaina, when mixed with some muriatic acid and heated to ebullition, decomposes and contains two other basic compounds, which are called by the author, thebenin and thebaicin. Arch. d. Pharm., April, 1870, 1-34.

Testing Opium.—G. J. Jacobson has examined the various processes hitherto suggested for a quantitative determination of morphia in opium. After recommending Hager's method as most preferable, he proposes to execute it in the following modified manner:

6½ grammes powdered opium and 3 grammes hydrated lime are intimately mixed in a mortar, and enough water added until the mixture acquires a thin pilular consistency. After introducing this into a flask of about 100 cubic centimetres (3½ to 4 ounces) capacity, which had been previously tared with its cork on an accurate balance, enough water is added to make the whole weigh 74½ grammes. The flask, which is loosely covered with its cork, is now heated over the water-bath, during an hour, to a temperature of 90° Celsius, and strongly agitated from time to time. After replacing it on the balance, Mr. Jacobson adds into it enough water to make up for loss sustained by evaporation, and passes the liquid finally through a small filter. He collects 50 cubic centimetres of the filtrate, to which he adds 4 grammes of chloride ammonium, after previously admixing to it 8 drops of benzole, and 3 cubic centimetres ether.

The solution soon becomes turbid, owing to the settling of crystallized morphia. After three or four hours' standing, the separated morphia is collected on a filter, washed with water, desiccated at a temperature not exceeding 50° C., washed once more with a small quantity of chloroform, and dried, when its weight may be ascertained. The obtained cypher, when multiplied by 20, gives the percentage of morphia in opium. N. J. f. Ph., B. 31, H. 3.

STRYCHNOS ALKALOIDS.

Strychnia.—N. Gray Bartlett publishes a formula for the preparation of a soluble citrate of iron and strychnia, containing one per cent. of the alkaloid. Chicago Pharmacist, March, 1870.

Brucia.—A new reaction of this alkaloid is communicated by S. Cotton, who states that a fine violet color is produced, which changes rapidly into green, if a concentrated solution of sodium sulphhydrate is added to a solution of brucia in nitric acid. The author claims that this reaction can be produced with a very small quantity of brucia, of which 2 milligrammes suffice to color $\frac{1}{2}$ litre of water. J. de Pharm. et de Ch., Juillet, 1869.

ALKALOIDS OF THE RANUNCULACEÆ.

T. & H. Smith, of Edinburgh, announced some time ago the discovery of a new alkaloid in aconite root, and named it aconella. They were disposed to consider it as identical with narcotine. Dr. F. A. Flückiger points out, however, that the latter has no alkaline reaction, whilst aconella restores the blue color of reddened litmus. He furthermore establishes the existence of several alkaloids in the various aconitum species, which differ from aconitina, and alludes to the names given them by their discoverers. Arch. d. Ph., March, 1870, 196.

ALKALOIDS OF THE SOLANACEÆ.

Hyoscyamina.—H. Höhn recommends for the preparation of hyoscyamina from *hyoscyamus* seed, to free the latter first from its fatty oil by expression or extraction with bisulphide

of carbon, and to exhaust the remaining press-cake with alcohol. According to him, pure hyoscyamina is precipitated from a concentrated solution by bichloride of platina, but it is soluble again in an excess of this reagent. Like atropina, it possesses the property to dilate the pupil.

Höhn subjected the pure alkaloid to an ultimate analysis, which led him to the formula $C^{36}H^{29}N^2O^7$. An elementary analysis of the gold double salt resulted, however, in a different formula; hence it seems desirable that this part of the investigation should be repeated, especially as the products of decomposition of hyoscyamina, when acted on by caustic potassa, seem to point to an identity with atropia. Arch. d. Ph., May, 1870, 215.

E. Thorey recommends to free the *hyoscyamus* seeds from fixed oil by exhaustion with petroleum ether before they are exhausted with alcohol. The latter is best mixed with a little muriatic acid, to render the alkaloid more soluble. One kilogramme of seeds yields about half a gramme pure hyoscyamina. Viertelj. Schr., 1870, 254.

RARELY OCCURRING ALKALOIDS

AND SUCH ALKALOIDS DERIVED FROM THE ANIMAL KINGDOM.

Buxina Sulphurica.—This preparation has been used in Italy with good success as a substitute for quinia. Ann. Univers. di Medicina, Milano, 1869.

Nectandria is the name of a new alkaloid discovered by Messrs. McClagan and Gamgee in the wood of the greenheart tree. It is characterized by the following properties: Its fusing-point is below the boiling temperature of water, it is but sparingly soluble in ether, and when treated with strong sulphuric acid and binoxide of manganese, it gives rise to a magnificent green color, which changes into a violet of great beauty. The formula assigned by the authors to this new alkaloid is represented by $C^{20}H^{23}O^4N$ ($C = 12$). Am. Journ. of Ph., Sept., 1869, from Lond. Ph. J., July, 1869.

Capsicina.—E. Felletar publishes some observations which seem to show the presence of a volatile alkaloid in capsicum. After boiling capsicum with water acidulated with sulphuric acid he added liq. potassa to the decoction, and subjecting the mixture to distillation, he found the distillate exhibiting a strong alkaline reaction and an odor resembling that of conia. This odor disappeared on mixing some muriatic acid with the distillate. Am. Journ. Pharm., Sept., 1869, from exchanges.

Cytisina.—This alkaloid, discovered in 1865 by Aug. Husemann, and Marmé, has again been made the subject of investigation by M. Husemann, who gives to it the formula $C^{40}H^{27}N^3O^2$. The free alkaloid forms white radiating crystals of a bitterish, faintly alkaline taste, which are fusible at about $154.5^\circ C$. It is very freely soluble in water and alcohol, little or not in ether, chloroform, benzole, and bisulphide of carbon. This alkaloid possesses according to Marmé poisonous properties. In small doses it operates as an emetic; 0.03 to 0.04 grm. killed a cat if subcutaneously injected. Introduced into the blood, death was produced in cats by 0.01, 0.015 grm.; in dogs by 0.03 grm.

Nitrate of cytisina = $C^{40}H^{27}N^3O^{21} \cdot 2NH_4^+ + 4HO^-$, is the only salt which crystallizes readily; it is sparingly soluble in absolute alcohol, freely in water and diluted alcohol, insoluble in ether. Am. Journ. Ph., Nov. 1869, from exchanges.

Betaïna = $C^6H^{11}NO^2 + H_2O$, an alkaloid met with in the juice of the sugar-beet root, has been studied again by M. C. Scheibler. Am. Journ. Ph., Nov. 1869, from exchanges.

Sanguinarina.—H. Nashold prepared this alkaloid and a number of its compounds, and studied their properties; his formula for the alkaloid is $C^{34}H^{15}NO^8$. Am. J. of Ph., July, 1870, from exchanges.

Joh. Oser states that he discovered an alkaloid in the distillation residue of fermented liquids, and gives the results of an elementary analysis of same. N. Jahrb. f. Ph., 1869, 7, 435, from exchanges.

Kreatin.—A. Commaille discovered in filtered and putrefied whey a crystalline organic body, which from its reactions he

concluded to be kreatinin; in consequence of this discovery he argued that kreatin must be contained in milk as a regular constituent from which the kreatinin is subsequently generated during the putrefaction process. N. J. f. Ph., 1869, 9, 558.

CARBON-HYDRATES.

Arrowroot.—Prof. Bætcher recommends for the detection of wheat starch in arrowroot to mix about one drachm of the suspected article with six ounces distilled water, and after heating this mixture to the boiling-point to stir it violently with a glass rod. An admixture of wheat starch causes a strong froth like lather of soap. Dingler's P. Journ., Aug., 1869.

Dextrine.—Commercial dextrine has been analyzed by R. Forster with the following results:

	1.	2.	3.	4.	5.	6.
Dextrine, .	72.45	70.48	68.60	59.71	49.78	5.84
Sugar, .	8.77	1.92	7.67	5.76	1.42	0.24
Insoluble, .	18.14	19.97	14.50	20.64	80.80	86.47
Water, .	5.64	7.68	14.28	18.89	18.00	7.95
	—	—	—	—	—	—
	100.00	100.00	100.00	100.00	100.00	100.00

The insoluble matter is chiefly unconverted starch. Hager proposes to purify this commercial article in the following manner: 10 parts of dextrine are dissolved in 18 parts cold distilled water; the solution after being allowed to deposit is decanted or passed through a woollen cloth and mixed with about twice its volume strong alcohol. The alcoholic liquid is poured off the pasty precipitate, and the latter dissolved in very little distilled water. The obtained solution may be spread out on glass or earthenware plates and brought to dryness in a warm room. Viertelj. Schr. f. Ph., 1870, 113–115.

Sugar.—To decide whether ultramarine or aniline blue has been used for coloring sugar, a large quantity of this article, according to Dr. Reimann, is dissolved in water and the solution allowed to settle. The precipitate is treated with hydrochloric acid, in which it dissolves under evolution of sulphuretted hydrogen if ultramarine has been used; if not acted on by hydrochloric acid, it is treated with alcohol, which produces a blue

solution if aniline blue has been employed. Pharm. Centr. H., 1869, No. 35.

Separation of Ordinary from Inverted Sugar.—Dubumfaul describes (Compt. Rend., Dec., 1869), at great length his experiments of separating, by means of lime, ordinary sugar from inverted sugar.

Glucose.—Liebig observed that glucose reduces mercury to its metallic condition from an alkaline solution of cyanide of mercury. This reaction can be made available, according to C. Knapp, for a quantitative determination of glucose. He found by a series of experiments, that four parts of cyanide of mercury in alkaline solution are reduced on boiling by the addition of one part of glucose, and he proposes, therefore, the following modus operandi: A known preparation of an alkaline solution of mercurial cyanide is heated to boiling and the sugar solution added from a burette; the end of the operation is recognized by applying a drop of the mixture to a piece of best Swedish filtering-paper, stretched over a beaker which contains sulphuret of ammonium. A brown spot appears as long as mercury is yet contained in the liquid, and a fresh addition of glucose solution is necessary. Knapp asserts this mode of glucose estimation to be as delicate as that of Fehling, but requiring less time. The main advantage of this mode is the fact, that the test-liquid (the alkaline solution of mercurial cyanide) will keep without deteriorating. Ann. d. Ch. und Pharm., 1870, 252.

Inuline.—Dragendorff publishes an investigation on inuline and its occurrence in plants. He alludes to the fact that this substance has thus far been discovered with certainty only in the family of the compositæ. His analysis of the roots of *Inula Helenium*, *Anacyclus officinarum*, *Cichorium intybus*, *Dahlia variabilis*, *Taraxacum officinale*, plainly shows a decrease of inuline during the sprouting period in spring, and an increase towards fall. Thus he found the proportions of inuline contained in roots gathered during

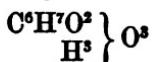
	March.	May.	June.	July.	Oct.
<i>Inula Helenium</i> , . . .	1.74 p. c.	5.44 p. c.	—	—	24.82 p. c.
<i>Cichorium intybus</i> , . . .	—	—	4.82 p. c.	86.58 p. c.	—

He noticed a considerable decrease of inulin in the roots of dahlia variabilis kept in his cellar over winter, viz.: Roots of dahlia gathered in October, gave on testing, 26.08 per cent. inulin; same roots examined in January, gave merely 24.10 per cent. inulin; same roots allowed to germinate before being analyzed, were free from inulin.

Dragendorff recommends the bulbs of dahlia, gathered in autumn, as the most suitable material for the preparation of inulin. After triturating them, he expresses the juice, which he allows to settle for from twelve to eighteen hours. He then admixes an equal volume of eighty-five per cent. of alcohol, by which albuminous, mucilaginous, and saline compounds are precipitated, passes the liquid rapidly through a filter, and deposits the inulin by a further addition of two volumes of alcohol. *Pharmac. Zeitschr. f. Russland*, Aug., Sept., Oct., 1869.

Ferrouillat and Savigny noticed that inulin from the dahlia (*Georgina purpurea*) and that from enula (*Inula Helenium*) do not yield the same products of derivation, and accordingly differ from each other. *N. Rep. f. Ph.*, 1869, 10, 636.

Cellulose and Starch.—Scheutzenberger succeeded in replacing a portion of the hydrogen contained in cellulose and starch by acetyl, thus producing a series of compounds resembling pyroxyline and xyloidine, in their chemical structure, but containing acetyl instead of peroxide of nitrogen. Hence he regards cellulose and starch as isomeric triatomic alcohols, according to the formula here given:



Pyroxyline (gun-cotton or collodion wool) when thoroughly moistened with concentrated sulphuric acid, after having been previously washed with water, and left standing in a suitable vessel, will be dissolved and converted into a colorless, syrupy fluid. Dr. Gintl, who made this observation, diluted the fluid thus obtained carefully with water, so as to prevent any increase of temperature, and next saturated it with carbonate of baryta. He then removed the sulphate and the excess of added carbonate of baryta by filtration, and after evaporating carefully

to dryness, he obtained a gum-like mass, consisting chiefly of the baryta salt of ligno-sulphuric acid. *Zeitschrift f. Ch. von Beilstein*, 1869, No. 22.

Collodium.—The great contractility of ordinary collodion, as prepared according to the United States Pharmacopœia, has been a source of frequent annoyance to those having to use it. An addition of castor oil remedies this defect, and has again been suggested by F. C. Musgiller. *Am. J. of Pharm.*, March, 1870, 145.

ALBUMINOIDS.

Pepsin.—Emil Scheffer publishes a formula for the preparation of liquid pepsin, and compares the dissolving powers of his article with that of the various commercial compounds. *Am. J. of Ph.*, March, 1870, 47.

Soluble Albumen.—Some time ago Monnier made the observation that albumen, obtained by a spontaneous evaporation of its solution in direct sunlight, or even after an exposure for several days to diffused daylight before evaporation, loses its coagulability. He now found that this property may be again imparted to it by an addition of diluted solutions of either acetic, formic, tartaric, or citric acid. *Viertelj. Schr. f. Ph.*, 1870, 250–252.

New Process for a Quantitative Estimation of Albumen.—Méhu suggests carbolic acid as a reagent for albumen. For this purpose he prepares a mixture consisting of 1 part of carbolic acid, 1 part of acetic acid, and 2 parts of alcohol. Of this mixture he adds a certain proportion to the liquid, which contains the albumen in solution. It is necessary to acidify with nitric acid before adding the carbolic acid mixture. The albumen is at once precipitated, and can be collected on a filter and weighed. *N. Rep. f. Pharm.*, Bd. 19, 178.

ORGANIC COMBINATIONS OF UNKNOWN OR DOUBTFUL COMPOSITIONS.

RESINS.

Dr. Sace studied the solubilities of gum copal, amber, dammar, shellac, elemi, sandarac, mastic, and rosin, in various solvents. Am. J. of Ph., from Polyt. Notizblatt, 1869, xxiv, p. 310.

Balata.—For some years past an article has made its appearance in trade under the name of balata, which has properties intermediate between caoutchouc and gutta percha. It is prepared from the milky juice of *Sapota Muelleri*, Sapotaceæ, which is indigenous to Guiana, and is exported to Europe mainly from Berbice. Am. J. of Pharm., March, 1870, 178; from Zeitschrift d. Allg. Ester. Apoth. Ver., 1869.

Ambrosine is the name given by C. M. Sheppard to a new fossil resin, which occurs in the phosphate beds of South Carolina. It bears a strong resemblance to amber, and gives off succinic acid when fused. Drug. Circ. and Chem. Gaz., May, 1870.

Chrysophanic Acid.—Rochleder repeated his ultimate analysis of chrysophanic acid, and found the data obtained in his previous investigation perfectly correct. The formula for chrysophanic acid is therefore $4(\text{C}^{14}\text{H}^{10}\text{O}^4) + \text{H}_2\text{O}$, and not $\text{C}^{14}\text{H}^{10}\text{O}^4$, as supposed by Gerhardt. N. Rep. f. Ph., 1869, 12, 712–720.

Alizarine.—H. W. Vaughan observed that the spectrum of artificial alizarine is identical with that of alizarine extracted from madder. The artificial alizarine was that furnished by Messrs. Perkin & Son, of London; the alizarine of madder employed was the commercial article produced by Messrs. Schaff & Lauth, of Strasbourg. Chem. N. A. Suppl., April, 1870, 224.

Oil of Sassafras.—E. Grimaux and Y. Ruothé studied the composition of oil of sassafras. They found it to be a mixture of a dextrogyrous hydrocarbon with an inactive oxygenated principle, and small quantities of a phenol. The hydrocarbon,

which they call safrene, consists of $C^{10}H^{16}$: they denominated the oxygenated principle safrol. This latter substance does not combine with bisulphites, and cannot be distilled without suffering a partial decomposition. Ch. N. A. R., March, 1870, 149.

Paraffine, according to observations made by Bolley and Fuchschmid, changes, if heated to about 150° C. in contact with the air, into a dark brown body, which is elastic like caoutchouc, and does not fuse any more at an elevated temperature. Wittst. Viertelj. Schr., 1870, 291.

PHARMACOGNOSY.

DRUGS DERIVED FROM THE VEGETABLE KINGDOM.

HYMENOMYCETES.

Amanita Muscaria, Persoon.—All investigations formerly instituted with a view to detect the poisonous principle of amanita muscaria had been without result until Kopp and Schmiedeberg furnished positive proof that it is an alkaloid, which they called muscarin. This substance is a crystalline mass, which liquefies readily on being exposed to the air. Its solution is without taste and odor, and has an alkaline reaction. It dissolves easily in alcohol and water, little in chloroform, and not in ether. The physiological action of muscarin presents great similarity with that exhibited by the calabar bean. Viertelj. Schr. f. Ph., 1870, 276–278. *

PYRENOMICETES.

Claviceps purpurea, Tulasne.—Wittstein's Viertelj. Schr., 1869, 481, contains an account of J. C. Herrmann on some constituents of ergot, from which the following is an extract: 20 oz. ergot yielded on exhaustion with ether, 6 oz. of a brown-yellow, thickish, non-drying oil, which, contrary to statements made previously by Manassewitz, was found to be saponifiable in caustic soda and caustic potassa. The author found that the acids in this fat were palmitic and oleic acids in combination

with glycerine. 1000 grains powdered ergot contained 50 grains water, and yielded 22.0156 ashes, consisting of chloride of sodium, silica and potassa, soda, lime, magnesia, alumina, iron, and manganese combined with phosphoric acid.

IRIDEÆ.

Crocus Sativus.—The “Répertoire” describes a sample of adulterated saffron occurring in commerce. Its color had been heightened by oil, to which a notable proportion of some pulverulent mineral matter was adhering. One gramme gave on incineration 25 per cent. of ash. Exhausted by ether and the solution evaporated, about 5 per cent. of fixed oil was obtained. The foreign matter in this sample of saffron amounted to about 20 per cent.

Heræus states that adulterations of saffron are practiced from time to time by impregnating it with honey, to which proportions of chalk are occasionally admixed. Honey causes the saffron to cake together if pressed with the warm hand; chalk detaches itself from the saffron on throwing it into water, and subsides. Wittstein's V. Schr., 1870, 91.

PIPERACEÆ.

Piper Cubeba.—An elaborate treatise on the constituents of cubebbs, and their chemical, physical, and medical properties, is published by E. A. Schmidt (Arch. d. Ph., Jan., 1870, 1). According to him fresh cubebbs contain in 100 parts:

Hygroscopic water, 4.750; ethereal oil, 14.215; brown coloring matter, 6.940; mucilaginous gum, 8.187; starch, 1.782; albumen, 2.714; extractive matter with salts, 4.240; phosphate of lime, 0.037; oxalate of lime, 0.403; malate of lime, 0.019; malate of magnesia, 0.481; cubebin, 2.484; acid cubeb resin (cubebic acid), 0.960; indifferent cubeb resin, 2.558; green fatty oil, 1.175; fat, 0.511; cellulose, 43.066; loss, 5.478.

The *Volatile Oil of Cubeba* is but slightly soluble in water, 12820 parts of the latter taking up only one part of essential oil. Its spec. gr. is 0.929. It boils at 220° C., and turns the

plane of polarization, 39.45° to the left. It is soluble in every proportion of ether, benzine, bisulphide of carbon, petroleum, ether, chloroform, fatty and ethereal oils. It requires, however, 27 parts of ordinary, and 18 parts of absolute alcohol for its solution.

Its composition is represented by the formula $C^{30}H^{24}$. It fulminates with iodine, and produces, with dry hydrochloric acid gas, a crystalline compound.

Cubeb Camphor, the crystalline stearopten of oil of cubebs, only occurs in the essential oil of old cubebs. Its composition is represented by $C^{30}H^{24}H^2O^8$.

Cubebin crystallizes when perfectly pure in white needles. It possesses no basic properties.

The substance denominated by Schmidt "acid cubeb resin," had been called by Bernatzik cubebic acid. The latter author supposed it to be the active principle of the plant. It forms amorphous resinous masses, is not crystallizable, and forms compounds with metallic oxides, which also do not admit of being crystallized. Its composition is represented by the formula $C^{13}H^6O^6$ ($C = 6$, $H = 1$, $O = 8$).

In order to establish the physiological properties of the single constituents, Schmidt instituted experiments with them on himself. After having taken four doses of ten drops of the ethereal oil, at intervals of two hours, he noticed that considerable warmth was produced throughout his body. A burning sensation in the region of the stomach, and perspiration over his whole body was produced after taking the sixth and seventh dose. His digestive organs were so strongly affected that he had to vomit after each attempt to eat something. Colicky pains, diarrhoea, a painful urination, and finally a feverish condition of the body set in, which symptoms disappeared only after the third day.

The watery extract had no effect, although its dose had been increased to 10.2 grms. during twenty-four hours.

Cubebin also exhibited no marked medical virtues. The two resins, however, had marked diuretic effects; hence it looks that

if cubebes possess any medical virtues, they reside in their resinous constituents. Arch. d. Ph., Jan., 1870, 1.

CUPULIFERÆ.

Castanea Vesca.—Ludwig examined the well-known eatable chestnuts (marrons) but was unable to detect any dextrine. This is contradictory to the statements of Albini, who claims having found in them from 22.8 to 23.3 per cent. of dextrine. Ch. N. A. R., March, 1870, 169.

SCROPHULARINÆ.

Digitalis Purpurea, L..—F. Schneider states that the infusion of a digitalis gathered in May or beginning of June does not produce a satisfactory reaction with either tannin or ferrocyanide of potassium. He furthermore asserts that digitalis collected near the end of August and beginning of September yields a deeply colored infusion of strong odor and taste, which, with tannin, gives at once a dense precipitate, and with ferrocyanide of potassium, after twelve to fifteen minutes, a strong turbidity. Hence it appears that the leaves should be collected late in summer. Pharm. Centr. Halle, 1869, No. 49.

Gelsemium Semperflorens (Gray).—Wormley examined the fluid extract of gelsemium and discovered therein a new organic acid and a new alkaloid, the former having been denominated gelseminic acid, and the latter gelseminine.

Gelseminic acid is a colorless, odorless, nearly tasteless solid crystallizable substance, not very much soluble in cold water, more so in hot water, and readily soluble in ether and chloroform. The gelseminates, with the exception of those containing the alkalies, are sparingly soluble in water. Gelseminic acid, or any compound containing it, when moistened with strong nitric acid, assumes a yellow color, which changes into a red solution. Ammonia added in excess produces a deep red color, which lasts for some hours.

Gelseminine is a colorless and odorless solid, of an intense bitter taste; it forms salts in combination with acids, and is but

sparingly soluble in water, freely, however in ether and chloroform. Am. Journ. of Pharm., Jan., 1870.

LABIATÆ.

Mentha Piperita.—F. Stearns, some time ago, made the statement that the contamination of our commercial oil of peppermint was mainly due to the circumstance that *erechtites hieracifolia*, Raf., growing amongst the peppermint plants, was gathered and distilled with the latter.

J. M. Maisch has now ascertained that this statement of Mr. Stearns is erroneous, and that the weed chiefly growing amongst peppermint, and giving rise to a contaminated oil by its being distilled with the latter, is not *erechtites*, but *erigeron canadense*, Lin. Maisch thinks that the thickening of commercial oil of peppermint and its rank odor is produced by the admixture of the *erigeron* oil. Am. J. of Ph., March, 1870, 120.

SOLANACEÆ.

Hyoscyamus Niger and Albus.—The Pharmac. Zeitschr. f. Russland, 1870, p. 129, publishes an essay of Ernst Thorey on the distribution of nitrogenated compounds in *hyoscyamus niger* and *albus*, in different stages of their development, which is re-published in a condensed form in the Am. J. of Ph., July, 1870, 323.

CONVOLVULACEÆ.

Convolvulus Scammonia and Ipomœa Jalapa.—H. Köhler and G. Zwicke investigated the solubilities of the resins occurring in scammonium and jalap. These two substances behave with reagents in the following manner:

Convolvulin is soluble in alcohol, but insoluble in ether and benzole; ether as well as benzole precipitate it from its alcoholic solution. When evaporated with some nitric acid added to it, convolvulin becomes violet red-colored on adding concentrated sulphuric acid. Nitrate of protoxide of mercury does not produce precipitate in a solution of convolvulin. An acid solution of this substance is however precipitated by alum. Nitrate of silver produces in convolvulin solutions a nonconglomerating pulverulent precipitate, which turns black immediately.

Jalapin is readily soluble in alcohol and ether; dissolves slowly in benzole, which takes it up from its alkaline solution when agitated with it; when evaporated with nitric acid it is not colored on the addition of concentrated sulphuric acid. An acid solution of jalapin is not precipitated by alum. Nitrate of the protoxide of mercury as well as nitrate of silver produce in alcoholic solutions of jalapin voluminous precipitates. The silver precipitate is only slowly changed on being exposed to the action of light. N. Jahrb. f. Pharm., July, 1869.

A reaction to discover an admixture of gum guaiac to resin of jalap has been described by Blacher. It is based on the observation that gum guaiac when mixed with oxide of copper and alcohol produces, on the addition of aqueous ammonia, a beautiful apple-green color, which will not appear if resin of jalap is substituted for gum guaiac. Chem. N. A. R., Jan., 1870, 39.

GENTIANÆ.

Ophelia Chiratæ.—H. Hohn subjected this plant to analysis with a view to isolate its bitter principle. It contains, according to him: 1. A syrupy bitter acid, which reduces cupric oxide from Trommer's test, and also silver from an ammoniacal solution. He calls this compound ophelic acid, and states it forms with lead and baryta amorphous salts. 2. An uncrySTALLizable bitter principle, which he denominates chiratin. 3. A wax-like substance which crystallizes in fine needles.

An elementary analysis of chiratin resulted in the formula: $C^{22}H^{20}O^{10}$. Another made with ophelia acid in the formula: $C^{26}H^{20}O^{10}$. Arch. d. Pharm., Sept., 1869.

APOCYNACEÆ.

Agoniada Lancifolia var. β major Müll. Arg..—The leaves, and especially the bark of agoniada, contain, according to investigations of Th. Peckolt, a neutral bitter principle, which is free of nitrogen and has almost the same composition as arbutin (from *arbutus uva ursi*). Peckolt proposes the name agoniadin for this body, whose composition, compared with that of arbutin, is as follows:

	Carbon.	Hydrogen.	Oxygen.
Arbutin,	52.9	5.9	41.2
Agoniadin,	52.4	6.0	41.6

Dr. Geuther, who made an ultimate analysis of agoniadin, does, however, not believe it to be identical with arbutin, because the latter resolves on being boiled with sulphuric acid into sugar and hydrochinon. Agoniadin, on being subjected to the same treatment, also yields sugar, but in place of hydrochinon, a brown amorphous substance. Besides, arbutin crystallizes from an aqueous solution with two equivalents of water, while agoniadin does not take up any water on crystallization. The agoniadin is therefore represented by the formula $C^{20}H^{14}O^{12}$, and has to be considered as a glycoside.

Agoniadin has been prescribed by physicians of Rio, Brazil, in doses of two to four grains, with great success against intermittents. Agoniada bark, in the form of powder as well as in decoction, has been employed for the same purpose.

The agoniada trees abound in a milky juice, which freely exudes on making incisions into the bark. This juice contains besides agoniadin a crystalline resin, for which Peckolt suggests the name phytotyrosin. This compound is obtained by first exhausting the evaporated milky juice with water, when the residue is extracted with hot absolute alcohol. This deposits on cooling the phytotyrosin in small white crystals. Their chemical composition has not yet been ascertained. Arch. d. Pharm., April, 1870, 34-48.

VACCINEA.

Vaccinium Vitis Idaea, L.—A crystallizable substance has been discovered in the leaves of this plant by E. Claassen. It forms four or six-sided prisms, is of a bitter taste, scarcely soluble in ether, pretty easily soluble in cold water and alcohol, and readily in boiling water. It melts when heated, but produces a precipitate neither with tannin nor subacetate of lead, and evolves no ammonia when fused with potassa. Am. J. of Ph., July, 1870, 297.

COMPOSITES.

Arnica Montana.—Dr. Alb. Schumann, of Dresden, relates a case which proves the long-disputed poisonous properties of arnica flowers. A woman took two teacupfuls of an infusion made from a handful of arnica flowers. Half an hour afterwards she began to vomit freely, strong cerebral congestions made their appearance, and a few hours afterwards she suffered from intense colicky pains. These symptoms subsided somewhat after the administration of opium and mucilaginous remedies; but the colicky pains made their reappearance, after the third day, again, and occasional diarrhoeas lasted still for a full week. N. Jahrbuch f. Pharm., Bd. xxxi., H. 3.

Bellis Perennis, L., contains, according to an analysis of J. B. Enz, tannic acid, which precipitates iron salts with green color, malic, tartaric, acetic, and oxalic acids, resin (antholeucin), yellow coloring matter (anthoxanthin), chlorophyll, wax, fat oil, ethereal oil, acrid substance, fermentable sugar, albuminous substance, mucilage, and an indifferent bitter principle. Viertelj. Schr. f. Ph., 1870, 1-14.

RUBIACEÆ.

Psychotria Emetica.—The root of this plant, known as striated ipecacuanha, has made its appearance in the London drug market, and was subjected to analysis by Dr. Attfield. He found it to yield $56\frac{1}{2}$ per cent. extract, containing only $2\frac{1}{4}$ per cent. of the pure alkaloid (emetina). The largest proportion of this extract consisted of grape, and especially cane sugar. Hence it need not be remarked that this root is wholly unfit for the preparation of medicinal compounds, and should be rejected. True ipecacuanha (*cephaelis ipecacuanha*), contains about $10\frac{1}{2}$ per cent. pure emetina. Pharmac. Journal and Trans., 1869, vol. xi, 141.

COFFEACEÆ.

Coffea Arabica.—A. Vogel discovered a reaction by which an admixture of even 2 or 3 per cent. roasted and ground chicory-root to ground and roasted coffee can be readily detected. It

is based on the formation of suboxide of copper by the sugar contained in chicory. Vogel's modus operandi is as follows: 2 or 3 grammes of the suspected coffee are mixed with about 20 c. c. cold water, and allowed to stand for about five minutes, when it is thrown upon a filter. A few drops of sulphate of copper solution are now added to the filtrate, and the mixture heated to boiling. The turbid liquid is once more filtered, and caustic potassa added in excess till the precipitate which appears at first is completely redissolved. This solution is now brought to a boil, when a precipitate of red suboxide of copper will make its appearance if an adulteration had been practiced. N. Rep. f. Pharm., Bd. 19, 159-163.

CINCHONACEÆ.

John Eliot Howard publishes an interesting memoir on the cultivation of different species of *Cinchona* under glass. A. J. of Ph., May, 1870, from Pharmac. Journ., London.

A process for a quantitative determination of the alkaloids in cinchona barks has been recommended by Dr. Vogl. To execute it, the bark is finely powdered and mixed with quicklime: 100 grains of bark and 250 of lime form a convenient quantity to operate upon. The mixture is damped with water, and then dried. The dry mass is then thoroughly exhausted with boiling 90 per cent. alcohol, and the solution filtered. To the filtered liquid a little dilute sulphuric acid is added, and the precipitated sulphate of lime filtered off; the tincture is then evaporated nearly to dryness over the water-bath. A little water is added, the liquid filtered, and caustic soda added. The white precipitate of the alkaloids thus obtained is collected in a weighed filter, dried, and weighed. The different bases can be separated by ether if desired. Pharm. Journ. and Trans., May, 1870, 721, from Neues Jahrb., f. Pharm., Jan., 1870.

Acclimatization of the Cinchona Trees in the Island of Réunion.—The success achieved with the cultivation of cinchona in the British and Netherlands Colonies, induced parties residing in the above-mentioned island to try the acclimatization of this important tree; and the result is such as to foster

the reasonable expectation that the island of Reunion will, within a few years, also become a cortex-producing country. Ch. N. A. R., March, 1870, 166.

CUCURBITACEÆ.

Momordica Elaterium.—It is well known that certain constituents of plants are developed at different periods of vegetation, preponderating in some, at others in very small quantities. Starting from this view, H. Kohler attempted to prove that the active principle of momordica elaterium is also developed at certain periods of the year in larger, at others in smaller proportions. He found the juice richest in elaterium early in the year, whilst later it decreased, and disappeared entirely from it in September. The same observation was made by him in reference to the proportion of albumen, whilst sugar, alkaline chlorides, and a peculiar bitter principle increased in the same ratio in which the two former decreased. Kohler investigated also the solubilities of elaterin, and made some statements in reference to its physiological action. N. Rep. f. Ph., 1869, 10-577.

Bryonia Dioica contains, according to Lucian de Koninck and Paul Marquart, a crystallizable substance which they call bryonicin. They describe it as being neutral to test-paper, and insoluble in cold water, liquor potassa, ammonia, and dilute mineral acids; it is dissolved, however, with great facility by alcohol, ether, chloroform, benzole, sulphide of carbon, glacial acetic acid, and concentrated sulphuric acid. Its solution in the last-named reagent exhibits a blood-red color. Water precipitates it from its solutions in sulphuric acid, alcohol, and acetic acid. It fuses at 50° C. Its elementary analysis led to the formula $C^{10}H^7NO^4$. N. Rep. f. Ph., 1870, p. 275-280.

PAPILIONACEÆ.

Glycyrrhiza Glabra.—The inspissated juice or commercial liquorice has been adulterated of late by an admixture of finely powdered charcoal. Journ. de Méd. de Bruxelles.

Physostigma Venenosum, Br..—The alcoholic extract of

physost. venen. exhibits, if spread out in thin layers, a fine copper-green color, and is completely soluble in alcohol, but forms with water only a turbid liquid. J. B. Enz found that Calabar beans cannot be completely exhausted with alcohol unless the fatty and resinous substances are first removed by solvents, such as ether, &c. He suggests to preserve Calabar bean preparations according to Appert's method, whereby air and light are excluded; this will prevent the decomposition of the physostigmin. Enz obtained two per cent. of extract from selected Calabar beans. Viertelj. Schr., 1870, 16.

LEGUMINOSÆ.

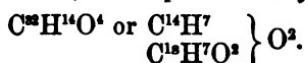
Hæmatoxylon Campechianum, Willd.—The alcoholic tincture of logwood is a reagent of great delicacy for iron and copper. Twenty drops in 200 c. c. water, free from either of these two metals, produce a yellow or rose-violet coloration, according to the preponderance of free carbonic acid, alkaline carbonates, alkaline earths, or ammonia. The immersion of an iron or copper wire into this liquid suffices to produce a blue color. Felix Bellamy says, this reaction is more delicate than that of tincture of nut-galls, sulphocyanide, or ferro and ferricyanide of potassium. Water, being passed through copper or iron pipes, dissolves enough of these metals to cause the appearance of a characteristic reaction. Journal de Pharm. et de Chem., October, 1869.

Myrospermum Peruferum, De Candolle.—An investigation of balsam of Peru by H. Kraut (Am. d. Chem. u. Pharm., Jan., 1870), has thrown much light upon the composition of this interesting substance. We publish herewith the main features of his examination.

Balsam Peru contains free cinnamic acid, resin, and the benzylic ether of benzoic and cinnamic acid. The two last-named compounds are known under the denomination of oil of balsam Peru, which is separated and obtained from the balsam in the following manner: Equal parts of balsam, ether, and solution of caustic soda (containing about 3 or 4 per cent.), are agitated together. This mixture separates on standing in two strata, the upper one of which is an ethereal solution of the oil,

which, after the ether has been removed by distillation forms about 60 per cent. of the balsam. This oil can be separated by fractional distillation in three parts; one boiling at 200° has the composition $C^{14}H^8O^2$ or $C^{14}\left\{H^7\atop H\right\}O^2$, and is benzylic alcohol; a second part distils over at 300°, is benzoate of benzylic ether = $C^{22}H^{12}O^4$ or $C^{14}\left\{H^7\atop H^5O^2\right\}O^2$.

The third product obtained by fractional distillation, is cinnamate of benzylic ether, and represented by the formula,



The soda solution, which forms the lower stratum of the mixture of soda, balsam, and ether, contains benzoic, cinnamic acid, and resin.

Kachler asserts (*Sitzungsber. d. k. Ak. der Wiss. Wien*, 1869, lix, 529), that the oil of balsam Peru cannot be distilled without causing its partial decomposition.

The benzoic acid contained in the balsam is, according to him, an oxidation product from the benzylic alcohol. The resin of balsam Peru was recognized by him to consist chiefly of proto-catechuic acid.

Delafontaine has also instituted some researches on the composition of balsam Peru (*Zeitschrift f. Chem.*, 1869, 156). According to him the oil of the balsam is a mixture of cinnamate of benzylic ether, and cinnamate of styrylic ether (styracin); these when agitated with caustic potassa, decompose into cinnamate of potassa and benzylic as well as styrylic alcohol, which two latter compounds can be separated by distillation. Kachler, however, obtained only benzylic alcohol, and was unable to detect styrylic alcohol. He points out that Delafontaine locates the boiling temperature of his styrylic alcohol at 222°, and describes it as an oil, while real styrylic alcohol is a crystalline body and boils at 250° C.

Pterocarpus Santalinus, Willd.—Weidel succeeded in separating from red saunders, two crystalline substances, which he calls "santal" and "santaline." The first one of these sub-

stances, not hitherto known, is a colorless crystalline body, which is soluble in alcohol and dilute solutions of caustic alkalies. An alkaline solution of santal when in contact with the air soon becomes colored, passing from red, through green, to a dirty brown. The alcoholic solution is neutral to test-paper, and is colored deep red with perchloride of iron. The formula of santal is $C^8H^4O^3$. Ch. N. A. R., 1870, 174.

CASSIAE.

Cassia Lanceolata.—H. Ludwig and R. Steitz instituted an elementary analysis of sennapicrin in its dry and hydrated condition, whereby they came to the conclusion, that this substance is isomeric with jalapin and jalapinic acid. The alcoholic extract of 6½ pounds fol. senn. alex. contained three grammes of sennapicrin, which is described as a yellowish white powder resembling tannin. It is readily soluble in alcohol, slightly in water, and not at all in ether. Archiv. d. Pharm., Oct. and Nov., 1869.

Arachis Hypogaea, L.—F. A. Flückiger made the so-called peanut (fruit of arachis hypogaea) subject of investigation. Viertelj. Schr. f. Ph., 1870, 16–28.

EUPHORBIACEÆ.

Euphorbia Cyparissias, L.—Heinrich Hohn separated from the blossoms of this plant a yellow crystalline coloring principle, to which he assigned the formula $C^{40}H^{20}O^{24}$. This substance differs from luteolin = $C^{40}H^{14}O^{16}$, which was discovered by Moldenhauer, in the Resedaceæ, by a plus of $6HO + 2O$, in consideration of which Hohn proposed the name luteinic acid for his new compound. Arch. d. Ph., Dec., 1869, 218.

Castilloa Elastica.—The manner of producing caoutchouc from the milky juice of this tree is described in Wittstein's Viertelj. Schr. f. Ph., 1870, p. 256.

Phyllanthus Emblica, L.—The fruits of this tree, known under the denomination myrobalani emblicæ, or ash-gray myrobalans, are recommended by Reinhold Hening as an excellent material for the preparation of tannic acid, of which they yield

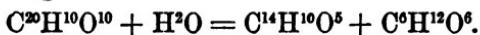
about forty-five per cent. Hager's Pharm. C. Halle, Nov., 1869; 44.

Ricinus Communis.—Tuson some time ago announced in the seeds of ricinus communis the discovery of a peculiar alkaloid, for which he suggested the name ricinine. In order to study this substance, E. Werner prepared a large quantity of the so-called ricinine, according to the directions given by Tuson, and found that the body thus obtained when properly purified does not contain any nitrogen; hence it cannot be an alkaloid. When heated on platina-foil it left a residue consisting principally of magnesia. Werner, on further investigation, came to the conclusion that Tuson's ricinine is the magnesia-salt of an organic acid, which is peculiar to the ricinus seed.

The ricinine of Tuson has no purgative properties; accordingly it was of interest to subject the ricinus seeds to another examination, for the purpose of isolating the purgative principle. Werner instituted a number of experiments, but ascertained merely that the active substance of the seeds is insoluble in 90 per cent. alcohol, but is readily taken up by cold water, whilst hot water seems to destroy it. Pharm. Zeitschr., Jan., 1870, No. 2.

RHAMNEÆ.

Rhamnus Frangula, L.—A. Faust has examined the bark, and found it contains, as characteristic ingredient, the frangulin, to which he assigns the formula $C^{20}H^{10}O^{10}$. This substance is, according to his investigations, a glucoside, which, when treated with acids, decomposes into sugar and frangulinic acid, as shown by the following formula:



N. Jahrb. Ph., May, 1869.

Rhamnus Infectorius.—The coloring matter contained in the berries of this shrub is insoluble in water. It has been named rhamnegin. Its composition is represented by $C^{24}H^{32}O^{14} + 3H^2O$. When acted on by sulphuric acid it is split up into sugar, and a new compound called rhamnetin. Journ. f. Pr. Ch., No. 13, 1869.

UMBELLIFERÆ.

Heracleum Spondylium.—Th. Zincke subjected the fruits of this plant to a chemical investigation. Eighty pounds fresh seeds yielded 120 grammes ethereal oil of a spec. grav. of 0.804. This was separated by fractional distillation in two oils, of which one was recognized as a compound ether, consisting of acetic acid and octyl alcohol, the other as pure octyl alcohol. Annalen d. Chem. u. Ph. clii, 1.

MYRTACEÆ.

Eucalyptus Globulus.—H. Weber publishes an analysis of this new drug, and prepared from it: 1. A volatile oil; 2. A resinous extract, containing white needle-shaped crystals; 3. A resin; 4. A peculiar acid; 5. A neutral bitter principle. He points out that the infusion of the leaves and the extract are possessed of valuable febrifuge properties, in such cases of intermittents in which quinia was without effect. Apoth. Zeitung., 1869, 82.

Valuable information as to the best modes for planting and cultivating the eucalyptus tree is given in the N. Rep. f. Rep., 1869, 9, 545.

A. Buchner publishes the results of a preliminary examination of *eucalyptus globulus*, and promises a complete analysis. N. Rep. f. Ph., 1869, 9, 551.

A tincture made from the leaves of this tree, which is cultivated in Spain and Portugal, and grows wild in Australia, is highly spoken of as an excellent febrifuge by Fred. Lorinser. N. Rep. f. Ph., 1869, 7, 410.

RANUNCULACEÆ.

Cimicifuga Racemosa.—A case is recorded in the "Medical and Surgical Reporter" for June, in which one drachm of Squibb's fluid extract of *cimicifuga racemosa* produced poisonous effects; in less than two hours, the patient, a lady, began to complain of great pain in the head, back, and limbs, with vertigo. The pupils were enormously dilated, and the vision much distorted. There was nausea and vomiting, with feeble

pulse and prostration. *Pharmac. Journ. and Transactions*, Sept., 1869, 160.

Clematis Vitalba.—The name clematin is given to a compound which Gaube claims having discovered in *clematis vitalba*. He states that this compound possesses alkaline properties, and that it forms with sulphuric acid a combination which crystallizes in six-sided prisms. According to him *clematis* contains besides an ethereal oil, tannin and mucilaginous substances. *N. Rep. f. Ph.*, 1869, 440, from *J. de Ph. et Ch.*

MENISPERMACÆ.

Cissampelos Pareira, L..—The U. S. *Pharmacopœia* of 1866, the British of 1867, and that of India, 1868, assume rad. *pareiræ bravæ* as the root of *cissampelos pareira*, whilst the French Codex states it derived from *botryopsis platyphylla*, or *abuta rufescens*. *N. Jahrb. f. Pharm.*, May, 1869. F. A. Flückiger discovered in the root a neutral crystallizable body, which dissolves with blue color in concentrated sulphuric acid. He denominated it dyamettin. *N. Jahrbuch f. Pharm.*, May, 1869, page 261.

The same author found by his investigations that pelosin (the alkaloid of the *pareira*), and beberin (the alkaloid contained in *nectandra*), are identical with buxin, the alkaloid occurring in *buxus sempervirens*. *N. Jahrb. f. Pharm.*, May, 1869.

FRAXINÆ.

Fraxinus Ornus and Rotundifolia.—An artificial manna has been brought from Paris into the London drug market, which is described by E. Histed as follows: When broken no crystals of mannite are to be seen in the interstices; there is an absence of the peculiar bitter taste, and of the odor characteristic of good manna; the fictitious manna is cleaner, lighter, more uniform in color, and more solid than is usual with natural flake; it dissolves more readily in water, and makes a clearer solution, which, when shaken, does not form a permanent froth. If one part be added to four of rectified spirit of wine, and the mixture be boiled for a few minutes, a residue, resembling clarified

honey, is obtained, whereas natural manna treated in the same way leaves a hard substance in irregular masses. It yielded only 40 per cent. of mannite, while natural manna yields about 70 per cent. Pharm. Journ., London, April, 1870.

Fraxinus Excelsior, L.—W. Gintl has examined the leaves of the European ash, and found fat, pectin, a resinous body, a crystallizable acid, a considerable quantity of a peculiar tannin and inosite, which he showed to be identical with the inosite in the muscular fibre of the animal body. Gintl found moreover also quercitrin, mannite, and sugar. Arch. d. Pharm., 1870, 77.

POLYGALÆ.

Krameria Triandra.—In an essay on the “rhatany root of Para,” Dr. Flückiger comes to the conclusion that (1.) There are at present three different kinds of rhatany in trade, which are best named after the principal parts, from which they are exported, viz.: Payta, Savanilla, and Para. (2.) The origin, derivation, and character of the two first is described in every modern pharmacological work. (3.) The Para variety has been first described by Berg, as “radix ratanhiae Brasiliensis,” and by Cotton, as “ratanhia of the Antilles.” (4.) The color of Para root is between dark gray and brown. (5.) This color differs distinctly from that of the Payta and Savanilla rhatany. (6.) The origin of the Para root is unknown. (7.) It is not admissible as a substitute for the officinal Payta rhatany, one of the other two varieties, on account of chemical differences in regard to their tannic acids, which require further investigation. The Para and Savanilla roots both contain an iron bluing tannin. Viertelj. Schr. f. Pharm., 1870, 2, 206.

CRUCIFERÆ.

Cochlearia Officinalis.—W. Hofman has shown that the essential oil of cochlearia differs from the oil of mustard, with which it is sometimes confounded. It boils at 159°–160° C., whilst the oil of mustard boils at 147° C. With ammonia, it furnishes a beautiful crystallized substance fusible at 135° C., the thiosinnamine of horseradish. The analysis of the oil and its ammo-

nia derivative, leads to the formula $C^{10}H^9NS^2$. Its rational formula is therefore according to the radical theory: C^9NS^2 , C^8H^9 , or typically expressed, $\left. \begin{matrix} C^2N \\ C^8H^9 \end{matrix} \right\} S^2$

Bulletin de la Société Chim., Oct., 1869.

PAPAVERACEÆ.

Papaver Somniferum, L.—Jul. Jobst publishes the results of experiments instituted with a view to raise poppy plants for opium production. He obtained about eight pounds of good opium per acre, and found it contained 13 per cent. morphia. N. Rep. f. Pharm. H. 8, 493.

An experimental attempt was made in Vermont to raise poppy plants for opium production.

William Procter, Jr. subjected a specimen of this opium to analysis, and obtained the following results from 100 grains: morphia, 15.75; narcotina, impure, 2.00; meconic acid, 5.25; caoutchouc, fatty matter, and resin, 11.00; insoluble residue, (including 0.5 ash), 22.00; matter soluble in water, other than salts of morphia and narcotina, as gum, extractive, &c., 38.5; water, 5.00. The quantity of soil under culture in this instance, was about one-tenth of an acre, and the entire crop of opium obtained amounted to eleven ounces; which, however, according to the opinion of the experimenter, might have been readily doubled by more careful attention. Am. J. of Ph., March, 1870, 124.

BIXACEÆ.

Bixa Orellana, L.—W. Stein triturates, for the preparation of the coloring matter contained in annatto, the fresh fruits of bixa orellana with alkaline water, filters and adds sulphuric acid in excess. The generated red precipitate forms after desiccation an amorphous powder, which is easily soluble in alcohol, carbonated and pure alkalies. It contains in 100 parts, 68.66 carbon, 6.87 hydrogen, and 24.47 oxygen. Jour. f. Pr. Chem., CII, 175.

DRUGS DERIVED FROM THE ANIMAL KINGDOM.

Cantharis.—After Messrs. Manning and Dragendorff had shown that cantharidin can be considered as an anhydride, which, in its combinations with bases, fixes two equivalents of water, and exhibits the properties of an acid, E. Delpech conceived the idea to try the vesicating properties of cantharidate of potassa. This compound is made in the following manner: 2 grammes cantharidin, dissolved in 150 grammes of alcohol, are mixed with 1.6 grammes of caustic potassa, previously dissolved in a little water. The whole becomes a soft crystalline mass, from which the alcohol is separated by pressure. 89 parts cantharidin give 163 parts cantharidate of potassa. This is soluble in water, slightly only in alcohol, and insoluble in ether and choloform. Cantharidate of potassa causes rapid vesication; hence the author feels justified in proposing the following formula for a blistering tissue:

Take of gelatine, 30 grains; water, 150 grains; alcohol, 150 grains; cantharidate of potassa, 6 grains; glycerine a sufficient quantity.

This liquid is spread out on gutta percha in thin sheets, so that each square of four inches will contain one centigramme of the cantharidate. Am. J. of Ph., May, 1870, from Journ. de Ch. Méd., 1870.

TOXICOLOGY.

Dr. H. Köhler publishes a report on micro-sublimation of alkaloids, in which he reviews the labors of Helwig, Guy, and Waddington. The author arrives at the conclusion that this method, from the results so far obtained, does not promise to be available for toxicological and forensic chemical analysis. Considering the fact that neither Helwig, nor Guy and Waddington were able to produce unmistakable constant results, although they operated with pure alkaloids, it seems reasonable to come, with Köhler, to the conclusion, that products of a fo-

rensic chemical analysis, which are never chemically pure, are still less adapted for micro-sublimation.

Dr. L. Sedgwick also points out that, in forensic investigations, materials often obtained with great difficulty should not be hazarded by risky methods, especially as the form of the crystals obtained by micro-sublimation depends on conditions beyond individual control. A longer or shorter duration of the subliming process, a greater or lesser purity of the material, differences of temperature, &c., are circumstances by which the results are greatly varied.

Sedgwick recommends as one of the most characteristic reactions for an alkaloid, the production of its iodosulphate. *Archiv d. Pharm.*, Oct. and Nov., 1869.

H. Köhler reports the latest investigations instituted with a view to establish the relations between chemical composition of poisons and their physiological effect. Crum, Brown, and Frazer studied the effects of certain substitution-compounds in which hydrogen is replaced by alcohol radicals. They operated with methyl-iodides of strychnia, brucia, thebaia, codeia, morphia, and nicotina, and found that 12 grains of strychnia-methyl-iodide had no poisonous effect, but that fatal results followed on the administration of 20 grains. It is especially remarkable that strychnia-methyl-iodide does not bring on the symptoms of strychnia poisoning which manifest themselves by tetanic effects, but that those of curare poisoning make their appearance.

The same authors also found the effects considerably decreased by operating with the methyl-iodides of brucia, codeia, thebaia, and morphia. Twenty grains, for instance, of the morphia combination were without effect. Similar observations were made by Cahours and Jolyel, who noticed that the action of aniline, in which an alcohol radical had been substituted to hydrogen, was greatly modified, and that the iodides of ethyl-conia and diethyl-conia differ remarkably in their effects from that of pure conia. *Archiv d. Pharm.*, Oct. and Nov., 1869.

Bisulphide of Carbon is recommended by W. R. Smith in cases of poisoning from opium and morphia salts, or to counteract the effects of chloroform. He saturates a towel with this

material and applies it the whole length of the spine. Chicago Medical Times.

Opium and Belladonna.—Proof is not wanting that opium and belladonna are antagonistic in their poisonous effects on the organism. Dr. Abeille publishes (*Gaz. Méd. de Paris*) a new case demonstrating the same fact. 0.05 grammes sulphate of atropia had been given by mistake to a boy, and when, after an hour, all symptoms of poisoning had made their appearance, muriate of morphia was subcutaneously injected in a quantity of 0.06 grammes dissolved in a few drops of water. This was repeated several times, until 0.33 grammes morphia salt had been administered, which caused an entire cessation of the symptoms of poisoning.

Phosphorus Poisoning.—The oil of turpentine was heralded some time ago, by Personne, as an excellent antidote in cases of poisoning by phosphorus. Dr. Curie and P. Vigier subjected this recommendation to a critical test, based on many experiments, and report that oil of turpentine has no value as an antidote against phosphorus. *N. Rep. f. Ph.*, 1869, 11, 676.

Pyrogallic Acid.—J. Personne administered this acid to two dogs; to one 2 grammes, to the other 4 grammes were given. The animal which received the largest dose died at the expiration of fifty hours, the other ten hours later. *Am. J. of Ph.*, March, 1870, 175, from exchanges.

Strychnia.—Charles Bullock relates a case of poisoning by strychnia, which is of great interest, because the fatal result in this instance was evidently brought about by the formation of an insoluble iodide of strychnia, which had formed and deposited in the vial containing a mixture intended for medicinal use. *Am. J. of Ph.*, July, 1870, 310.

OBITUARY.

Prof. Graham, died on the 17th of September, 1869, in his 64th year, being born at Glasgow, on the 25th December, 1805.

Berard, M. J. E., Prof. Chem., Montpellier, France; died on the 10th of June, 1869.

Prof. H. E. Dussauche, died at New Lebanon, New York, on the 20th of June, 1869.

Prof. Dr. Otto Linné Erdmann, died October 9th, 1869, at Leipzig, Germany.

Dr. Joseph Redtenbacher, Professor of General and Pharmaceutical Chemistry in the University of Vienna, Austria, died in that city March 5th, 1870.

Franz Beckert, Apothecary, and Director of the Austrian Apothecary's Society, died at Vienna, March 5th, 1870, in his 74th year.

Prof. Franz Unger, Botanist, was found dead in his bed at Graz, Austria, on the 13th of February, 1870.

Fred. Jul. Otto, Professor of Technical Chemistry and Pharmacy in the Collegium Carolinum, at Brunswick, Germany, died on the 12th of January, 1870.

Fr. Kirschleger, Professor of Botany at the School of Pharmacy, Strasbourg, France, died on the 15th of November, 1869, in his 66th year.

Stephane Robinet, Pharmacien, of Paris, France, died on the 6th of December, 1869, in the 74th year of his age.

Sir James Young Simpson, died at Edinburgh, Scotland, on the 8th of May, 1870.

Heinrich Gustav Magnus, Professor at the University of Berlin, died in that city on the 4th of April, 1870.

Dr. Penny, Professor of Chemistry at the University of Glasgow, died at that place, November, 1869.

P. F. Boullay, died at Paris in his 92d year.

Dr. Fred. Kummer, died at Munich on the 22d of March, 1870.

PHARMACEUTICAL LITERATURE.

Recent Publications Relating to Pharmacy.

UNITED STATES OF NORTH AMERICA.

- Fownes's Manual of Chemistry. American edition. By Robert Bridges. Philadelphia: H. C. Lea. 1869.
- Braithwaite's Retrospect of Practical Medicine and Surgery. Part lix, July. American edition. New York: W. A. Townsend. 1869.
- The Half-Yearly Abstract of the Medical Sciences. Vol. xlix, July, 1869. Philadelphia: H. C. Lea. 1869.
- A Course of Practical Chemistry Arranged for the use of Medical Students. By William Odling. Philadelphia: H. C. Lea. 1869.
- The Progress and Condition of Several Departments of Industrial Chemistry. By J. Lawrence Smith. Washington: 1869.
- The Dispensatory of the United States of America. By G. B. Wood and Franklin Bache. 13th edition. Philadelphia: J. B. Lippincott & Co. 1870.
- Proceedings of the American Pharmaceutical Association at the Seventeenth Annual Meeting, held in Chicago, Illinois, September, 1869. Philadelphia: Merrihew & Son. 1870.

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REPORT OF THE COMMITTEE ON SPECIMENS.

The exhibition of specimens, though not so extensive as that of last year at Chicago, is a very fine one, and creditable alike to the exhibitors for the general excellence of the articles exhibited, and to the local secretary, Mr. J. Faris Moore, and his colleagues, for the taste displayed in their arrangement.

Your committee divided the articles under three general heads: *First*, drugs and pharmaceuticals; *Second*, chemicals; *Third*, mechanical and fancy goods; and in endeavoring to observe the hint thrown out at the time of their appointment, "to avoid any appearance of advertising," may have adhered too closely to the bare mention of the articles exhibited.

They would, however, make special mention of the excellent educational series of gums, &c., exhibited by Messrs. McKesson & Robbins, of New York, containing samples of the various grades of each gum as found in the market, also a sample of gum sennari or false gum arabic, seldom seen under its true name.

Of the generous samples of the alkaloids of cinchona bark and opium, from Messrs. Powers & Weightman, of Philadelphia.

Of the beautiful specimen of soluble citrate of bismuth, and handsome crystals of iodide of potassium, of their own manufacture, from Messrs. Chas. T. White & Co., of New York.

Of the handsome specimens of chloral-hydrate, peroxide of

barium, papyroxyle, æthylden-chloride and purified naphthaline, among the chemicals exhibited by Messrs. Schering & Glatz, New York, agents for E. Schering, of Berlin.

Of the extensive series of essential oils from Mr. Robert Platzer, of Philadelphia, many of which are out of the market.

Of a few rare chemicals exhibited by Messrs. Andrews & Thompson, of Baltimore, among which were ferrous and ferric pyrophosphate of iron, as well as some unusually handsome scales of the soluble pyrophosphate of iron, of the United States Pharmacopœia, sesquioxide of manganese, sesquiox. chromium, sesquichlor. chromium, &c.

Of the magnificent soda water draught apparatus called "The Frost King," from Mr. John Matthews, of New York.

Of the choice selection of microscopic objects of medicinal drugs and articles of food, exhibited by Dr. Frederick Hoffmann, of New York.

Dr. Hoffmann truly says: "The microscope is nowadays an indispensable acquirement to the educated pharmacist. Its application to the examination of drugs and pharmaceutical preparations, as well as of articles of commerce and domestic use, having become general."

"To the pharmacist, a collection of reliable specimens of microscopical preparations of medicinal drugs and their adulterations, or accidental or fraudulent admixtures, is of good service for comparative examination, as well as for the instruction of clerks and apprentices."

The objects exhibited, were mostly prepared by Mr. C. Rodig, of Hamburg, Germany.

DRUGS.

Among the most prominent samples in the room, were two cases of very fine rhubarb, every piece having been bored in the way that Russian rhubarb used to be; exhibited by Dr. Squibb.

Robert Shoemaker & Co., Philadelphia, exhibited twelve specimens of powdered drugs. All appeared to be very carefully prepared.

Thompson & Block, Baltimore, exhibited some excellent speci-

mens of drugs and volatile oils. Among them, selected narcotic leaves, from Hening & Co., London, fine samples of senega, rhubarb, mandrake, ammoniac in large tears, Baltimore wormseed, sassafras, Ceylon cinnamon, oils of sassafras, wormseed, &c., making altogether a very creditable display.

B. O. & G. C. Wilson, Boston, exhibited dried and pressed herbs; also nice samples of unpressed herbs and powders.

McKesson & Robbins, New York, exhibited gums and pharmaceutical preparations. Their display of gums and resinous substances numbered seventy-seven specimens, and included nearly all the substances of this kind used in medicine, and several varieties of each. Of aloes, there were eight specimens and four varieties, powdered and whole; gum arabic, ten specimens of six varieties; gum sennari or false gum arabic, three varieties, &c.

They also exhibit, from their laboratory, a number of fluid extracts prepared by the process of cold percolation, hydrarg. cum creta prepared by succussion, and samples of gelatine-coated pills of the United States Pharmacopœia, made under the direction of Mons. Cauhapé; the advantages claimed for these over sugar-coated pills being that they are coated while in their natural soft and unimpaired condition, and that the coating and pill-mass are more readily soluble and more efficacious than the sugar-coated pills.

Powers & Weightman, Philadelphia, exhibited excellent samples of red, Calisaya, Pitaya, and other Peruvian barks.

Robert Platzer, Philadelphia, exhibited forty-six samples of volatile oils, some of them being very rare. We may mention oils of calamus, coriander, curaçao (*citrus bigaradia*), Australian eucalyptus (lately much used for adulterating other oils), angelica, cascarilla, celery, cherry laurel, cognac (distilled from the grape), ginger, rose serail, sage, rhodium, scurvy grass, and yarrow.

PHARMACEUTICAL PREPARATIONS.

Samuel Campbell & Co., Philadelphia, exhibited several fluid extracts and fine perfumes.

E. Parrish & Son, Philadelphia, exhibited flavoring extracts, granular effervescing salts, elixirs, syrups, and toilet waters.

Sharp & Dohme, Baltimore, exhibited fluid extracts, elixirs, and syrups in considerable variety.

N. Hynson Jennings & Co., Baltimore, exhibited a line of elixirs, very nice cologne water, and a preparation called sherry kina.

J. Faris Moore, Baltimore, exhibited a variety of medicinal elixirs, tinct. chloride of iron, and fluid extracts.

Burrough Bros., Baltimore, exhibited a very full line of fluid extracts.

Mellor & Rittenhouse, Philadelphia, exhibited fluid and solid extracts, resin of jalap, spread plasters, court plasters, flavoring extracts, &c.

Hance Bros. & White, Philadelphia, exhibited spread plasters, fluid extracts, fruit juices, solid extracts, powd. blue pill, sugar-coated pills, &c.

CHEMICALS.

Powers & Weightman, Philadelphia. Ninety specimens. The largest display in numbers and varieties, as usual. Among the most prominent may be mentioned the alkaloids of opium and the cinchonas, while among the most perfect and large crystallized chemicals exhibited by this firm are the acetate of soda, alum, bromide of potassium, cyanide of mercury, nitrate of ammonia, and sulphate of copper.

Rosengarten & Sons, Philadelphia. Fifty-four specimens. The next largest in the various cinchona and opium alkaloids. The samples of permanganate of potassa, chromic acid, and iodide of cadmium deserve particular attention on account of the beauty and perfect form of their crystallization; also the finely crystallized salts of sulpho-carbolate of soda and sulpho-carbolate of zinc, hypophosphite of lime and ammonio-citrate of bismuth.

Chas. T. White & Co., New York. Forty-three specimens. The iodide of potassium of their own manufacture is beautifully white. Their bromide of potassium and preparations of iron in scales are very fine, and, in connection with the display of

chemically pure mineral acids, acetic acid, and other chemicals, is quite to their credit.

E. Schering, Berlin. Thirty-two specimens. Two very fine samples of hydrate of chloral in tabular form. The crystallized sesquichloride of iron and permanganate of potassa are fair representatives of those salts. The specimen crystals of iodide and bromide of potassium take the palm as to size, while their crystallized hydrate of baryta, nitrate of uranium, tannic acid, and resublimed naphthaline deserve especial notice. They also exhibit æthylden chloride, metallic bismuth, papyroxyle, &c.

Hartmann, Laist & Co., Cincinnati. Samples of pure colorless and inodorous glycerine, specific gravity, 1.260. Also specimens of Epsom salt of their own manufacture.

Thompson, Block & Co., Baltimore, exhibit samples of Epsom salt made by Boston Chemical Works; acetate of lead and acetic acid manufactured by the Hartford Chemical Works; specimens of Calvert's carbolic acid, and a fine sample of Merck's fused and moulded glacial phosphoric acid.

Baltimore Chrome Works. A splendid specimen of crystallized bichromate of potassa, accompanied by a sample of chrome ore, from which the salt is prepared.

Geo. S. Dickey, San Francisco. Fine specimens of scaled, pulverized, and granular Monsel's salt.

MECHANICALS AND FANCY GOODS.

Dr. Wilson H. Pile, Philadelphia, exhibited a fine assortment of hydrometers, alcoholometers, urinometers, saccharometers, specific gravity bottles, grain weights, &c. These instruments are well known throughout the country for the care and accuracy with which they are made.

Charles Shivers, Philadelphia. Machine-spread adhesive plaster and court plasters; also arnica, opium, aconite, and belladonna plasters of same style and consistence as adhesive plaster.

Henry Troemner, Philadelphia. Drug mill, very compact in the grinding plates of steel.

Hance Bros. & White, Philadelphia. A variety of machine-spread plasters of good consistence and uniform thickness. Drug mill for crushing and powdering raw drugs, of simple construction and good workmanship. Lot of sugar-coated pills and granules. Samples of non-wasting, percolating, and filtering apparatus, consisting of a glass or tin cylinder, open at top and closed at bottom with a diaphragm of strainer, muslin, or other material, suspended in a cylindrical vessel with tight fitting cover.

Mellor & Rittenhouse, Philadelphia. Very nice machine-spread arnica, belladonna, Burgundy pitch, and poor man's plasters, and court plasters.

S. Mason McCollin, Philadelphia. A lot of neatly spread plasters of excellent consistence, containing a small portion of India-rubber. Rabbit skin chest protectors; ring, horse-shoe, and SS pessaries; court plaster, isinglass plaster; conical sponge-tents, composed of sponge saturated with solution of gum arabic, tragacanth, and starch; the merit claimed for these being that they expand from moisture more promptly and to a greater extent than sponge saturated with wax.

Whitall, Tatum & Co., Philadelphia. Lot of flint, blue, and green glass prescription and packing bottles.

Bullock & Crenshaw, Philadelphia. An assortment of sugar-coated officinal and non-officinal pills and granules of very handsome finish.

William C. Bakes, Philadelphia. Large wedgewood mortar and pestle, with crank and lever attachment for giving lateral circular motion to both. Double pharmaceutical still and water bath; suppository moulds and tray for cooling same; Thomas's traction press for pressing juices from fruits or extractive matters from macerated drugs; camphor ice tray; gas furnace and lot of tin plaster patterns of various shapes.

Jeremiah Quinlan, New York. Samples of glass labels for bottles and drawers. New style stand for store or show window, consisting of adjustable glass shelves on a central metallic rod.

E. Parrish & Son, Philadelphia. Double pharmaceutical

still and water-bath. Botham's (English) nursing bottle, of elaborate construction. Wooden pill-roller and silver coating box.

John Matthews, New York, exhibited a "Frost King" draught apparatus, of verde antique marble, of very elegant design and great beauty of finish. The peculiar merits claimed for this apparatus are, *First*. That by means of the glass syrup tanks, tin pipes, and tin-lined connections, both the waters and syrups are dispensed in a pure state, free from contamination with any poisonous or soluble metals.

Second. The glass coolers permit an immediate inspection of the waters, and give notice when a fountain is becoming exhausted.

Third. The tumbler chamber keeps the tumblers cool and free from insects or dirt.

Fourth. The glass tanks permit inspections of the syrups at pleasure, while the valve arrangement for drawing syrups is simple and easily operated.

This apparatus is also provided with gas jets for illumination at night.

Dr. Frederick Hoffmann, New York, exhibited a selection of mounted microscopic objects, embracing some forty specimens of rhizomes, roots, and tubers; thirty of woods and barks; some twenty-five or thirty of fruits and seeds, and the same number of various articles of food.

FERRIS BRINGHURST,
WILLIAM T. WENZELL,
GEORGE F. H. MARKOE,
Committee.

ADDRESS TO THE NORTH GERMAN APOTHECARIES' ASSOCIATION.

THE committee appointed at the fifth session of the eighteenth annual meeting has furnished the secretary with the following copy of the address, which was engrossed in the English and German languages, and by the chairman transmitted to Mr. W. Danckwortt, of Magdeburg, the President of the North German Apothecaries' Association.

JOHN M. MAISCH,
Permanent Secretary.

TO THE NORTH GERMAN APOTHECARIES' ASSOCIATION:

The foundation of the North German Apothecaries' Association, and the celebration of its fiftieth anniversary, both happened at memorable periods in German history. After successive revolutions and changes in the social, political, and moral condition of the German nation, and in philosophy and the natural sciences, its intellectual life and energy began to grow with renewed vigor. Close upon the long-continued struggle for the highest national blessings, sciences and arts established upon the basis of the old structure a sound foundation, and industry in all its branches, fostered by the vigorous progress of the empirical sciences, gradually reached a firm basis, upon which they developed themselves into stable institutions.

The universal awakening to participation in public life caused the necessity for united discussion and action, and the subsequent impetus given to all vocations has called into existence the useful scientific and professional societies and associations.

Pharmacy has likewise participated in the general progress and development, and, urged by the late Dr. Rudolph Brandes, and a number of co-workers, the North German Apothecaries' Association was established at Minden, on the 8th of September, 1820. It grew rapidly in numbers, and during the half century of its existence it has taken an active part in the scientific progress and in the material welfare of pharmacy. This Association has labored with great advantage for the general advancement of pharmacy, through the untiring efforts and the fostering care of useful and benevolent institutions, and through a proper representation of pharmacy in the civil and public service. The same has been achieved in its practical relations and upon the field of special investigations and literature. All

this has secured for the Association a just share of the high regard and estimation in which German pharmacy everywhere is held.

The American Pharmaceutical Association, which unites the pharmacists and druggists of North America for the advancement of their profession and science, at the fifth session of its eighteenth annual meeting, held at Baltimore, on the 15th day of September, 1870, unanimously resolved to present their high regards and felicitations to the North German Apothecaries' Association at its fiftieth anniversary. The undersigned committee, appointed and authorized to carry out this resolution, fulfills this trust with pleasure, and with the hope that this expression of its interest and sympathy may be kindly received. Many of their American colleagues are indebted to Germany for their education and knowledge. Not merely the common origin, but the community of intellectual and humane aims, unite the two great nations on both sides of the ocean, and enliven our interest in the illustrious history of German pharmacy and of the North German Apothecaries' Association, whose fiftieth annual meeting was necessarily postponed until the return of peace after the present great national struggle.

New impulses in many branches of public and industrial life will doubtless arise, as is the case after great national agitations. They may unsettle established conditions, and introduce innovations which may or may not leave pharmacy unaffected, since the modern desire for change has for some time aimed to force pharmacy in Germany from its time-honored, firm position into the current of free trade. The pharmacists of those countries, where from their own observations they are aware of the evils which follow from the unrestricted practice of our profession, and who feel a lively interest in the preservation of the high and influential position of German pharmacy, hope that the German people and the German pharmacists may retain the boon of scientific requirements and legal regulations for the practice of pharmacy, which constitute a sound foundation for the beneficent exercise of the pharmaceutical profession.

In expressing the best wishes of the American Pharmaceutical Association for the prolonged prosperity of the North German Apothecaries' Association, we also hope that German pharmacy, which has always been distinguished for its profoundness and thoroughness in scientific investigation and research, may continue in its aims for the advancement of our profession through humane and scientific attainments, and through conscientiousness, and that the North German Apothecaries' Association may be united with its younger sister association of North America in the common aims for the progress and elevation of our profession and for its welfare in the service of humanity.

Die Gründung des Norddeutschen Apotheker-Vereins, wie die Feier seines 50jährigen Bestehens, fallen in eine denkwürdige Zeit der deutschen Geschichte. Damals, in der Folgezeit der Revolution und der geistigen

Umwälzung in den politischen und sozialen Zuständen, in der Philosophie und in den Naturwissenschaften, erstarkte, nach dem Verlaufe langjähriger Kämpfe um die höchsten nationalen Güter, das geistige Leben und die Thatkraft der deutschen Nation. Auf den Trümmern des alten Baues gestalteten sich mit praktischem Erfolge Wissenschaft und Kunst; Industrie, Handel und Gewerbe, und alle von den Fortschritten der empirischen Wissenschaften geförderten Berufsarten gelangten in den ruhigen Strom selbstständiger Entwicklung und dauernder Institutionen.

Mit der allgemeinen Bewegung im öffentlichen Leben wiedererwachte auch das Bedürfniss des gemeinsamen Strebens, welches, anregend durch das lebendige Wort und durch die That, in allen Berufsarten fördernd gewirkt hat durch die Herbeiführung wissenschaftlicher, gewerblicher und gemeinnütziger Vereine und Associationen. Auch die Pharmacie nahm Anteil an den Fortschritten und der neuen Gestaltung, und am 8 September, 1820 wurde auf Anregung des verewigten Dr. Rudolph Brandes und einer Anzahl gleichstrebender Fachgenossen der Norddeutsche Apotheker-Verein zu Minden ins Leben gerufen. Derselbe wuchs schnell empor an Umfang und Kraft, und hat während des halben Jahrhunderts seines Bestehens wesentlichen Anteil gehabt an den wissenschaftlichen Fortschritten und der materiellen Gestaltung der Pharmacie, zu deren allgemeiner Förderung der Verein durch jedwede Anregung und Unterstützung, sowie durch gemeinnützige und humane Institutionen, und durch würdige Vertretung der Pharmacie im Staats- und öffentlichen Leben, in den gewerblichen Beziehungen und auf dem Felde der fachwissenschaftlichen Forschungen und Literatur segensreich gewirkt und damit berechtigten Anteil an der Anerkennung und Achtung erworben hat, welche die deutsche Pharmacie überall besitzt.

Die American Pharmaceutical Association, welche die Apotheker Nord Amerika's zur Förderung von Beruf und Wissenschaft vereint, fasste auf ihrer 18ten Jahresversammlung in Baltimore am 15 September, 1870 den einmütigen Beschluss, dem Norddeutschen Apotheker-Verein zu seiner fünfzigjährigen Stiftungsfeier die Anerkennung und Glückwünsche der Association darzubringen, und erwählte und bevollmächtigte zur Ausführung dieses Beschlusses das unterzeichnete Committee. Dasselbe erfüllt diese Aufgabe freudig und in der Hoffnung, dass dieser Ausdruck der Theilnahme und Anerkennung amerikanischer Fachgenossen, von denen nicht wenige ihre Erziehung und Bildung Deutschland verdanken, wohlwollende Aufnahme finden möge. Nicht nur der gemeinsame Ursprung, sondern die Gemeinschaft der geistigen und humanen Bestrebungen verbinden die beiden grossen Nationen diesseits und jenseits des Oceans und erfüllen uns mit regem Anteil an der ruhmvollen Geschichte der deutschen Pharmacie und des Norddeutschen Apotheker-Vereins, dessen 50ste Jahres- und Festversammlung durch den grossen nationalen Kampf um die höchsten Güter der deutschen Nation bis zur Wiederkehr friedlichen Gedeihens hinausgeschoben worden ist.

Wie nach jeder grossen nationalen Bewegung werden neue Impulse auf vielen Gebieten des öffentlichen und gewerblichen Lebens bestehende Zu-

stände erschüttern und einzelne Neuerungen herbeiführen, welche vielleicht auch den pharmaceutischen Beruf nicht unberührt lassen werden, da in Deutschland das moderne Streben nach Neuerungen seit einiger Zeit auch die Pharmacie aus der alten solidarischen Stellung in den Strom der freien gewerblichen Zustände hineinzudrängen versucht hat.

Die Pharmaceuten der Länder, welche die Misstände, welche unbeschränkte Ausübung unseres Berufes herbeiführen, aus eigner Anschaugung kennen, und welche ein lebendiges Interesse haben an der Erhaltung der hohen und weithin fördernden Stellung der deutschen Pharmacie, hoffen, dass das deutsche Volk und die deutschen Pharmaceuten sich diese und deren Sicherstellung im gewerblichen und im Staatsleben als der nothwendigen Basis zur gedeihlichen und soliden Ausübung und zu einer geachteten Stellung des pharmaceutischen Berufes erhalten werden.

Mit dem Ausdrucke der besten Glückwünsche der American Pharmaceutical Association für das fernere gesegnete Gedeihen des Norddeutschen Apotheker-Vereins verbinden wir daher den Wunsch, dass die deutsche Pharmacie, welche mit der deutschen Forschung und Wissenschaft Tiefe und Gründlichkeit zu allen Zeiten gemein gehabt hat, unter der Aegide des Norddeutschen Apotheker-Vereines in gedeihlicher Entwicklung fortfahren möge, anregend und fördernd für die fernere Gestaltung unseres Berufes und für dessen Hebung durch humane und wissenschaftliche Bildung und durch Pflichttreue zu wirken, und dass der Norddeutsche Apotheker-Verein fortan Hand in Hand verbunden sein möge mit dem jüngern Bruder-Vereine in den Vereinigten Staaten auf der Bahn des Fortschrittes und des gemeinsamen Strebens für das Wohl der Mitmenschen und für das Beste unseres Berufes.

NEW YORK, November, 1870.

FR. HOFFMANN, Ph. D.,
Chairman, Pharmacist in New York, N. Y.

JOHN M. MAISCH,
Pharmacist in Philadelphia, Pa.

E. H. SARGENT,
Pharmacist in Chicago, Ill.

Countersigned:

R. H. STABLER, M. D.,
Pharmacist in Alexandria, Va.

President American Pharmaceutical Association.

LAWS RELATING TO THE PRACTICE OF PHARMACY.

PASSED IN THE UNITED STATES DURING THE YEAR
1870.

I. STATE OF RHODE ISLAND.

*An Act to Regulate the Sale of Medicines and Poisons, passed
March 31, 1870.*

It is enacted by the General Assembly as follows :

SECTION 1. It shall be unlawful for any person, unless a registered pharmacist, or registered assistant pharmacist in the employ of a registered pharmacist, within the meaning of this act, to retail, compound, or dispense medicines or poisons, except as hereinafter provided.

SEC. 2. Any person, in order to be registered in the meaning of this act, must be either a graduate in pharmacy, a practicing pharmacist, or a practicing assistant in pharmacy.

SEC. 3. Graduates in pharmacy must be such as have obtained a diploma from a regularly incorporated college of pharmacy within the United States; or such foreign graduates in pharmacy as shall present satisfactory diplomas or credentials of their attainments to the pharmaceutical board of this State, and pay a fee of five dollars. Practicing pharmacists, in the meaning of this act, within this State, shall be such persons only, as, at, or prior to the passage of this act, have kept and continue to keep open shop for compounding and dispensing the prescriptions of medical practitioners, and for the sale of drugs and medicines. Practicing assistants in pharmacy shall be such

persons as have served four years' apprenticeship in a shop where the prescriptions of medical practitioners are compounded, and shall have passed an examination before the pharmaceutical board of this State, as hereinafter provided.

SEC. 4. The governor of the State shall, on or before the first day of July, A.D. 1870, and every third year thereafter, appoint seven persons who shall constitute the pharmaceutical board of the State, the members of said board so appointed by the governor shall hold office for the term of three years, and until their successors are elected, and in case of vacancy by removal from the State, resignation or death, the governor shall have power to fill the vacancy from the registered pharmacists of this State.

SEC. 5. The duties of the pharmaceutical board shall be to examine all candidates presenting themselves; to direct the registration by the registrar of pharmacists of all persons properly qualified or entitled under this act; to cause the prosecution of all persons violating its provisions; and to report annually to the General Assembly on the condition of pharmacy, together with the names of all persons registered as pharmacists or assistant pharmacists. Four members of the pharmaceutical board shall constitute a quorum; they shall organize by the election of a president and secretary for the entire term, who shall sign all certificates and other official documents; they shall meet at least twice a year, and shall have power to make by-laws for the proper fulfilment of their duties under this act. The secretary of the board of pharmacy shall be also registrar of pharmacists. All persons applying for examination shall pay to the pharmaceutical board ten dollars, and, if passing the examination, shall be furnished with a certificate in accordance with schedule E of this act, for which certificate no fee shall be exacted or paid. A registrar, guilty of any misconduct or malfeasance in office, shall be removed from office, and a successor appointed by the governor, and he may be fined at the option of the court in a sum not to exceed five hundred dollars, to be paid into the State treasury.

SEC. 6. The duties of the registrar shall be to keep a book

in which shall be entered, under the supervision of the pharmaceutical board, and in the form set forth in schedule B to this act, the name and place of business of every person doing business in this State, who shall apply to him in the form set forth in schedule C to this act, producing proper evidence, in accordance with sections three and four of this act, that he is a graduate in pharmacy or a practicing pharmacist, or a duly qualified practicing assistant in pharmacy. It shall also be the duty of the registrar to erase from his register the name of any registered pharmacist who may have died or removed from the State, and to make all necessary alterations in the location of persons registered under this act. For the first registration as registered pharmacist, the registrar shall receive a fee of five dollars; provided that all persons in business at the time of the passage of this act shall be entitled to registration on paying one dollar. Registration must be renewed each year, for which one dollar only shall be received. The registrar shall, on the written demand of any registered pharmacist or registered assistant, accompanied by a fee of twenty-five cents, give him a certificate under his own hand, setting forth in the manner prescribed in schedule H to this act, that such person is so registered.

SEC. 7. Any person not a registered pharmacist, who shall, after the first day of July, 1870, keep open shop for the retailing and dispensing of medicines and poisons, or who shall take, use, or exhibit the title of registered pharmacist, shall, for every such offence, forfeit and pay fifty dollars; and any registered pharmacist or authorized retailer of poisons, who shall fail to comply with the regulations of this act in regard to retailing, dispensing, and compounding of poisons, shall forfeit and pay a like sum of fifty dollars for the first offence, and one hundred dollars for the second, and every subsequent offence, to be recovered to the use of the pharmaceutical board; and all such penalties shall be sued for and recovered in the name of the said board in an action of debt; provided, however, that in towns and parts of towns where there is no registered pharmacist within three miles, it shall be lawful for retail dealers, annually,

to procure licenses from the registrar of pharmacists, at a fee of one dollar, to sell the usual domestic medicines put up by some registered pharmacist, and marked with his label, excepting, however, the poisons enumerated in schedule A of this act.

SEC. 8. Nothing contained in this act shall apply to or in any manner whatever interfere with the business of any practitioner of medicine, who does not keep open shop for the retailing, dispensing, or compounding of medicines and poisons, nor prevent him from administering or supplying to his patients such articles as may seem to him fit and proper; nor shall it interfere with the making and dealing in proprietary remedies (popularly called patent medicines), unless such medicines be wholly or in part composed of some one or more of the articles enumerated in schedule A; nor with the business of wholesale dealers in supplying poisons according to the ordinary course of wholesale dealing to retailers and physicians, and for use in the arts.

SEC. 9. From and after the first day of July, A.D. 1870, it shall be unlawful for any person to sell, either by wholesale or retail, any poison, without distinctly labelling the bottle, box, vessel, or paper, and wrapper or cover, in which said poison is contained, with the name of the article, the word poison, and the name and place of business of the seller. Nor shall it be lawful for any registered pharmacist or authorized retailer of poisons to sell or dispense poison, without first entering in a book kept for that purpose only, and subject always to inspection by the pharmaceutical board, or any officer or agent thereof, or other proper authority, and to be preserved for at least five years, a record of the same, in accordance with schedule F accompanying this act.

SEC. 10. The provisions of section 9 shall not apply to articles to be exported, nor to any articles forming part of the ingredients of medicines compounded in accordance with the written prescription of a practitioner of medicine; but all prescriptions, whether or not composed in part of an ingredient or ingredients, declared by this act to be poisons, must be carefully kept by the pharmacist on a file or in a book for that purpose only, and numbered in the order in which they are received or

dispensed, and every box, bottle, vial, vessel, or packet, containing medicine so dispensed, must be labelled with the name and place of business of the pharmacist so dispensing them, and be numbered with a number corresponding with that on the original prescription retained by the pharmacist on his file or book as aforesaid. Such prescription must be preserved at least five years, and shall be open to the inspection of the writers thereof, and a copy must be furnished by the pharmacist, if demanded by either the writer or purchaser or both, for which copy or copies the pharmacist shall not exact any fee.

Sec. 11. From and after the passage of this act, it shall be unlawful for the proprietor of any pharmaceutical shop to allow any person not a graduate or a practicing assistant in pharmacy, to compound or dispense the prescriptions of physicians, except as an aid, under the immediate supervision of said proprietor, of a graduate, or a practicing assistant in pharmacy.

Sec. 12. From and after the passage of this act, all persons who shall knowingly, intentionally, and fraudulently adulterate or cause to be mixed any foreign or inert substance with any drug or medicinal substance, or any compound medicinal preparation, recognized by the Pharmacopœia of the United States or of other countries as employed in medicinal practice, with the effect of weakening or destroying its medicinal power, or who shall sell the same otherwise than in the unbroken original package put up by the manufacturer and labelled with his name and address, or who shall sell such unbroken original package, knowing the article contained therein to be thus adulterated, shall be guilty of a misdemeanor, and on conviction thereof, before any proper court, shall forfeit all the articles so adulterated, which may be in his possession at the time he is complained of for said offence, and shall be deprived of his license, and be made incapable of practicing as a pharmacist in this State thereafter. When complaint shall be duly made, under oath or affirmation, before any justice of the peace, of suspected violation of any of the provisions of this act, it shall be the duty of the board of pharmacy to make investigation thereof, employing competent persons to make analysis of suspected

articles when necessary; and if such charges shall be substantiated, the board shall, in accordance with section 5 of this act, cause prosecution to be made against the offenders. The fees received for examinations, registration, and certificates of registration under this act, shall be appropriated to defray the expenses of the board of pharmacy, in such proportion and in such way as they shall direct; provided, however, that one-eighth of the whole receipts shall be reserved as a fund to pay the cost of chemical analysis, which may be conducted under the direction of said board.

SEC. 18. All other acts and parts of acts inconsistent here-with are hereby repealed.

NOTE.—The schedules referred to in the foregoing act are identical with those proposed with the draft of the law of the American Pharmaceutical Association, published in the proceedings for 1869.

II. STATE OF MARYLAND.

An Act to Prevent Incompetent Persons from Conducting the Business of Druggist or Apothecary, in the City of Baltimore.

WHEREAS, Many unskilled and unqualified persons are engaged in vending, mixing, and compounding drugs, medicines, and chemicals, to the great danger of the health and lives of the people of Baltimore, and it is expedient that legislation shall be had to remedy said evil; therefore,

SECTION 1. Be it enacted by the General Assembly of Maryland, that hereafter no person or persons shall conduct or open any retail drug and chemical store, as the proprietor or principal, or engage in the business of dispensing medicines, compounding physicians' prescriptions, or vending at retail, any drugs, chemicals, and other medicines, without having first obtained a certificate of his or their qualification and competency for such purpose, from the commissioners to be appointed under the provisions of this act.

SEC. 2. And be it enacted, that the Maryland College of Pharmacy shall nominate biennially, of the most skilled and competent pharmacists of Baltimore, ten persons, out of whom the governor shall appoint three commissioners, whose duty it shall be to examine all and every person or persons who shall

desire to engage in the business of retailing drugs and chemicals, and of dispensing medicines and compounding physicians' prescriptions in said city, touching his or their competency and qualification, and upon said commissioners, or any two of them, being satisfied of the competency and qualification of such person or persons as aforesaid, then the said commissioners, or any two of them, shall grant to such person or persons, a certificate thereof, which shall entitle such person or persons to carry on the business aforesaid.

SEC. 3. And be it enacted, that the commissioners to be appointed under the provisions of this act, shall be styled "The Commissioners of Pharmacy and Practical Chemistry," and shall hold their office for two years and thereafter, until their successors shall be appointed and qualified. And within thirty days after their appointment, they and each of them shall take and subscribe, before the clerk of the Superior Court of Baltimore City, an oath faithfully and impartially to discharge the duties prescribed by this act. And in case of vacancies occurring in said commission from death, resignation, or otherwise, the governor shall fill said vacancies by appointment from among the ten nominated to him, to fill the unexpired term.

SEC. 4. And be it enacted, that the commissioners under this act shall keep a book of registration open at some convenient place, of which due notice shall be given through the public press. And it shall be the duty of all apothecaries, now engaged in conducting the business for themselves or others, to appear before said commissioners within the period of sixty days after said notice and be registered. In case of failure or neglect to be so registered, they shall forfeit the advantages conveyed to them by the eighth section of this act.

SEC. 5. And be it enacted, that said commissioners shall be entitled to demand and receive from every such applicant for such certificate as aforesaid, the sum of not over five dollars, to be applied to the payment of the expenses arising under this act.

SEC. 6. And be it enacted, that if any person shall engage in the retailing and vending of drugs and chemicals, and of dispensing and compounding physicians' prescriptions contrary

to the provisions of this act, either directly or indirectly, or as copartner, or in the name of any other person or persons, such person so offending shall be liable to a fine of fifty dollars for each and every week they or he shall continue such business without such certificate as aforesaid, to be recovered before a single justice of the peace of said city, as small debts are, whereof one half-part shall go to the informer, and the balance to be disposed of as other fines and penalties.

SEC. 7. And be it enacted, that this act nor anything contained therein, shall not affect or apply to any person who shall have a diploma from any college or school of pharmacy, based upon a regular apprenticeship to the apothecary business.

SEC. 8. And be it enacted, that none of the provisions of this act, excepting those contained in section 4, shall be so construed as to apply to any person now engaged in the apothecary business in the city of Baltimore.

SEC. 9. And be it enacted, that this act shall take effect from the day of its passage.

III. STATE OF PENNSYLVANIA.

An Act to Prevent and Punish the Publication of Obscene Advertisements and the Sale of Noxious Medicines.

SECTION 1. Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same, That from and after the passage of this act it shall not be lawful to print or publish advertisements of medicines, drugs, nostrums, or apparatus for the cure of secret or venereal diseases, or for the cure of those diseases peculiarly appertaining to females; and if any person shall print or publish, or procure to be printed or published, in any newspaper in this State, any advertisement of medicines, drugs, or nostrums, or apparatus for the cure of secret or venereal diseases, or for the cure of those diseases peculiarly appertaining to females, or shall, by printing or writing, or in any other way publish an account or description of such medicines, drugs, nostrums or apparatus,

or shall procure the same to be published or written, or in any other way published, or shall circulate or distribute any such newspaper advertisement, writing or publication, every such person so offending shall be guilty of a misdemeanor, and shall, upon conviction thereof, be fined in any sum not exceeding one thousand dollars, or be imprisoned in the county jail, not exceeding six months, or both, at the discretion of the court.

SEC. 2. That if any person shall print or publish, or cause to be printed or published, in any newspaper in this State, any advertisement of any secret drug or nostrum purporting to be for the use of females; or if any druggist or other person shall sell or keep for sale, or shall give away any such secret drug or nostrum purporting to be for the use of females, or if any person shall, by printing or writing, or in any other way, publish an account or description of any drug, medicine, instrument, or apparatus for the purpose of preventing conception, or of procuring abortion or miscarriage, or shall, by writing or printing, or any circular, newspaper, pamphlet or book, or in any other way publish or circulate any obscene notice, or shall, within this State, keep for sale or gratuitous distribution any secret drug, nostrum, or medicine for the purpose of preventing conception, procuring abortion or miscarriage, such person or persons, so violating any of the provisions of this act, shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be fined in any sum not exceeding one thousand dollars, or be imprisoned in the county jail not exceeding six months, or both, at the discretion of the court: *Provided*, That nothing in this act contained shall be construed to affect teaching in regular chartered medical colleges, or the publication of standard medical books.

BUTLER B. STRANG,
Speaker of the House of Representatives.

CHARLES H. STINSON,
Speaker of the Senate.

APPROVED the sixteenth day of March, Anno Domini one thousand eight hundred and seventy.

JNO. W. GEARY.

LIST OF SOCIETIES, LIBRARIES, JOURNALS, AND INDIVIDUALS,

To whom complimentary copies of the Proceedings of this Association are forwarded.

The State Libraries of all the States of the Union except Connecticut.		
Maine Pharmaceutical Association,	Portland,	Maine.
Bowdoin College,	Brunswick,	"
Dartmouth College,	Hanover,	New Hampshire.
Amherst "	Amherst,	Massachusetts.
Harvard University,	Cambridge,	"
Massachusetts College of Pharmacy,	Boston,	"
City Library,	"	"
" Hospital,	"	"
Boston Medical and Surgical Journal,	"	"
" Athenæum,	"	"
University of Vermont,	Burlington,	Vermont.
Brown University,	Providence,	Rhode Island.
Trinity College,	Hartford,	Connecticut.
Yale College,	New Haven,	"
College of Pharmacy of the City of N. Y.,	New York,	New York.
American Druggists' Circular,	"	"
New York Medical Journal,	"	"
Astor Library,	"	"
Mercantile Library,	"	"
Long Island Historical Society,	Brooklyn,	"
Philadelphia College of Pharmacy,	Philadelphia,	Pennsylvania.
American Journal of Pharmacy,	"	"
College of Physicians,	"	"
Pennsylvania Hospital,	"	"
Academy of Natural Sciences,	"	"
Franklin Institute,	"	"
American Philosophical Society,	"	"
Philadelphia Library,	"	"
Mercantile Library,	"	"
American Journal of Medical Sciences,	"	"
Medical and Surgical Reporter,	"	"
Dental Cosmos,	"	"
Linnæan Society,	Lancaster,	"
Maryland College of Pharmacy,	Baltimore,	Maryland.
University of Maryland,	"	"

Smithsonian Institution,	Washington,	Dist. Columbia.
Congressional Library,	"	"
Surgeon-General U. S. Army,	"	"
Pharmaceutical Association of the District of Columbia,	"	"
Richmond Medical Journal,	Richmond,	Virginia.
Nashville Journal of Medicine & Surgery, Nashville,		Tennessee.
University of Louisiana,	New Orleans,	Louisiana.
Cincinnati College of Pharmacy,	Cincinnati,	Ohio.
Cincinnati Academy of Medicine,	"	"
Cincinnati Lancet and Observer,	"	"
Dr. Langdon, Longview Lunatic Asylum,	"	"
Wayne Medical Society,	Richmond,	Indiana.
Western Journal of Medicine,	Indianapolis,	"
Iowa State Medical Society,	Des Moines,	Iowa.
Detroit Review of Medicine & Pharmacy, Detroit,		Michigan.
University of Michigan,	Ann Arbor,	"
Chicago College of Pharmacy,	Chicago,	Illinois.
" Medical Examiner,	"	"
" Journal,	"	"
St. Louis College of Pharmacy,	St. Louis,	Missouri.
" Medical and Surgical Journal,	"	"
" Medical Reporter,	"	"
" Academy of Science,	"	"
" Mercantile Library,	"	"
" Public School Library,	"	"
Leavenworth Medical Herald,	Leavenworth,	Kansas.
California Pharmaceutical Society,	San Francisco,	California.
Pacific Medical and Surgical Journal,	"	"
Montreal Chemists' Association,	Montreal,	Canada.
Canadian Pharmaceutical Society,	Toronto,	"
Sociedad de Farmacia Argentina, Prof. Carlos Murray, Buenos Ayres.		
Library of British Pharmaceutical Conference, Dr. J. Attfield, London.		
Pharmaceutical Journal and Transactions, London.		
Chemical News, London.		
Chemist and Druggist, London.		
London Lancet, London.		
British Museum, London.		
Liverpool Chemists' Association.		
Pharmaceutical Society at Edinburgh.		
Academie Royale de Médecine, Bruxelles.		
Société de Pharmacie de Bruxelles.		
Journal de Pharmacie d'Anvers.		
Société de Pharmacie, M. Henri Buignet, Secrétaire, Paris.		
Academie des Sciences, Paris.		
Journal de Pharmacie et de Chimie, Paris.		

320 SOCIETIES TO WHOM PROCEEDINGS ARE FORWARDED.

Répertoire de Pharmacie, Paris.

Schweizer Apotheker-Verein, Mr. R. Lindt, President, Bern.

Schweizerische Wochenschrift für Pharmacie, Mr. Gruner, Bern.

Oesterreichischer Apotheker-Verein, Wien.

Oesterreichische Zeitschrift für Pharmacie, Wien.

K. K. Gesellschaft der Aerzte, Dr. Hauke, Secretary, Wien.

K. K. Akademie der Wissenschaften, Wien.

K. Bayer, " München.

Neues Repertorium für Pharmacie, Prof. Buchner, München.

Vierteljahrsschrift " Prof. Wittstein, München.

Norddeutscher Apotheker-Verein, W. Danckwortt, Magdeburg.

Neues Jahrbuch für Pharmacie, Dr. Vorwerk, Speyer.

Archiv der Pharmacie, Prof. Dr. H. Ludwig, Jena.

Chemisches Centralblatt, Dr. Rud. Arendt, Leipzig.

Jahresbericht für Chemie, &c.

Jahresbericht für Pharmacognosie, Pharmacie und Toxicologie, Prof. Dr. Wiggers, Göttingen.

Annalen der Chemie and Pharmacie, Prof. Dr. Wohler, Göttingen.

K. Akademie der Wissenschaften, Göttingen.

" Berlin.

Pharmaceutische Central-Halle, Dr. H. Hager, Berlin.

Pharmaceutische Zeitung, Bunzlau.

Pharmaceutische Gesellschaft in St. Petersburg, Dr. A. Casselmann, St. Petersburg.

Pharmaceutische Zeitschrift für Russland, St. Petersburg.

Pharmaceutisches Institut, Dorpat, Russia.

Pharmaceutical Institution, Stockholm, Sweden.

LIST OF PUBLICATIONS RECEIVED,

For the American Pharmaceutical Association.

Societies and editors are respectfully referred to the report of the undersigned, published on page 26, and requested to forward all publications intended for the American Pharmaceutical Association to the Permanent Secretary,

JOHN M. MAISCH,
1607 Ridge Avenue, Philadelphia, Pa.

- Steiger's Literarischer Monatsbericht. New York, 1870.
American Journal of Medical Sciences, Philadelphia.
Dental Cosmos, Philadelphia.
Sixth Annual Report of the Alumni Association of the Philadelphia College of Pharmacy, 1870.
Report of the Pennsylvania Hospital for the Insane for the year 1869. By Thomas S. Kirkbride, M.D. Philadelphia, 1870.
First Annual Report of the Maryland Eye Infirmary. Baltimore, 1870.
Twenty-fourth Annual Report of the Commissioners of the Ohio State Library for the year 1869. Columbus, 1870.
Tenth Annual Report of the Longview Asylum for the year 1869. Cincinnati, 1870.
Eleventh Annual Report of the Board of Directors and Officers of the Longview Asylum to the Governor of Ohio, for the year 1870. Cincinnati.
The Pharmacist, Chicago.
The Arts. Devoted to Science and Arts. Chicago, 1870.
Pacific Medical and Surgical Journal, San Francisco.
Public Laws of the State of Rhode Island. Chapter 856. 1870.
General Laws passed by the Legislature of the State of Pennsylvania during the session of 1870. Harrisburg.
Proceedings of the Second Annual Meeting of the California Pharmaceutical Society. San Francisco, 1870.
Proceedings of the Convention for the Reorganization of the Medical Society of the State of California. San Francisco, 1870.
The Canadian Pharmaceutical Journal. Edited by E. B. Shuttleworth. 1870, December. The only number received.
Pharmaceutical Journal and Transactions, London.
Bulletin de la Société de Pharmacie de Bruxelles. Not received, December, 1869. August to November, 1870.
Neues Jahrbuch für Pharmacie, Speyer.
Wittstein's Vierteljahresschrift, München.

- Buchner's Neues Repertorium, München.
- Sitzungsberichte der Königl. Bayer. Akademie der Wissenschaften. 1868,
1869, 1870, I. München.
- Anzeiger der Kaiserl. Akademie der Wissenschaften in Wien, 1870.
- Schweizerische Wochenschrift für Pharmacie.
- Pharmaceutische Zeitschrift für Russland. Not received, November, 1869
and 1870, No. 1.
- Nachrichten von der K. Gesellschaft der Wissenschaften, &c. Göttingen,
1869.
- Die Pflanzenstoffe in chemischer, physiologischer, pharmakologischer und
toxikologischer Hinsicht, von Dr. A. Husemann und Dr. Th. Husemann.
1 Lief. Berlin, 1870.
- Materialien zu einer Monographie des Inulins, von Dr. G. Dragendorff. St.
Petersburg, 1870.
- Die Analyse des Harns in Fragen und Antworten für Mediciner und Phar-
maceuten, von Dr. Arthur Casselmann. St. Petersburg, 1868.
- Taschenbuch der Geheimmittellehre. Eine kritische Uebersicht aller bis jetzt
untersuchten Geheimmittel., von Dr. G. C. Wittstein. Nördlingen, 1871.

AUTHORIZED AGENTS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Nominated by the Treasurer and Permanent Secretary, and approved by the President, to carry out the resolution passed at the fifth session of the 18th Annual Meeting.

<i>California,</i>	James G. Steele,	San Francisco.
<i>Dist. of Columbia,</i>	Joseph W. Nairn,	Washington.
<i>Delaware,</i>	Ferris Bringhurst,	Wilmington.
<i>Illinois,</i>	Louis Strehl,	Chicago.
<i>Kansas,</i>	Robert J. Brown,	Leavenworth.
<i>Kentucky,</i>	C. Lewis Diehl,	Louisville.
<i>Louisiana,</i>	John H. Pope,	New Orleans.
<i>Maryland,</i>	Professor J. Faris Moore,	Baltimore.
<i>Massachusetts,</i>	Henry W. Lincoln,	Boston.
<i>Michigan,</i>	William Johnston,	Detroit.
<i>Missouri,</i>	Eugene L. Massot,	St. Louis.
<i>New Jersey,</i>	James R. Mercein,	Jersey City.
<i>New York,</i>	Charles B. Smith,	Newark.
<i>Ohio,</i>	Daniel C. Robbins,	New York.
<i>Pennsylvania,</i>	George C. Close,	Brooklyn.
<i>Tennessee,</i>	Hiram H. Hill,	Cincinnati.
	John M. Maisch,	Philadelphia.
	Alfred J. Rankin,	Pittsburg.
	Henry C. Steever,	Memphis.

**CONSTITUTION AND BY-LAWS OF THE AMERICAN
PHARMACEUTICAL ASSOCIATION.**

These documents, as revised and adopted at the last meeting, are published on pages 88 to 95 of the present volume, and therefore not reprinted here.

FORM OF APPLICATION.

Approving of the objects of the American Pharmaceutical Association, I am desirous of joining it in membership, and having read its Constitution and By-Laws, I hereby signify my approval of the same, and subscribe to them.

Address _____

I hereby agree to return my certificate of membership in the American Pharmaceutical Association to the Treasurer of that body, if I shall hereafter cease to be connected in membership with it.

TESTIMONIALS.

The undersigned members in good standing, being personally acquainted with _____ of _____ testify to his moral character, his skill as a practical druggist and pharmacist, and his professional probity and good standing, and they recommend him for membership in the American Pharmaceutical Association.

NAME.

ADDRESS.

ROLL OF MEMBERS.

HONORARY MEMBERS.

UNITED STATES OF AMERICA.

Montgomery J. Bailey, M.D.,	New York,	New York,	1856
Elias Durand,	Philadelphia,	Penna.,	1857
Daniel B. Smith,	"	"	1856
George B. Wood, M.D.,	"	"	1857

FOREIGN COUNTRIES.

BELGIUM.

A. T. De Meyer, *Brussels*, 1868. Norbert Gille, *Brussels*, 1868.

ENGLAND.

Henry Deane, *London*, 1868. Daniel Hanbury, *London*, 1868.

GERMANY.

Dr. Hermann Hager, *Berlin*, 1868. Dr. Frederick Mohr, *Bonn*, 1868.
Dr. G. C. Wittstein, *Munich*, 1868.

RUSSIA.

Dr. Arthur Casselmann, *St. Petersburg*, 1868. Dr. G. Dragendorff, *Dorpat*, 1868.

SWITZERLAND.

Dr. F. A. Flückiger, *Berne*, 1868.

ACTIVE MEMBERS.

UNITED STATES OF AMERICA.

ALABAMA.

Mobile.

ALABAMA.		ARKANSAS.	
<i>Mobile.</i>		<i>Hot Springs.</i>	
Candidus, Philip Charles,	. 1857	Uhl, Charles F.,	. . . . 1866
Parker, Charles G., . . .	. 1870		
Primo, Manuel, . . .	. 1868		
<i>Tuscumbia.</i>		<i>Little Rock.</i>	
Johnston, Charles P., . . .	. 1868	Naulty, William H., . . .	. 1870

CALIFORNIA.		
<i>San Francisco.</i>		
Calvert, John,	1870	Cromwell, Zachariah W., . . 1870
Dickey, George S.,	1859	Ferguson, Robert B., . . 1867
Geary, William,	1870	Fitzgerald, John E., . . 1869
Greatrex, Thomas J.,	1869	Fitzgerald, Joseph S., . . 1869
McKay, George J.,	1864	Gaither, Francis, 1860
Moffit, John W.,	1870	Harbaugh, Valentine, 1856
Moffitt, Thomas S.,	1861	Hickling, Daniel P., 1867
Painter, Emlen,	1870	Kidwell, John L., 1856
Perkins, William Alexander,	1869	Lineaweafer, Kline C., 1864
Simpson, William,	1870	Milburn, John A., 1858
Steele, Henry,	1859	Murray, Talbot C., 1863
Steele, James G.,	1859	Nairn, Joseph W., 1858
Wenzell, William T.,	1870	O'Donnell, James D., 1870
<i>Hayward.</i>		Rothrock, Weller, 1869
Richards, Edward J.,	1870	Sayre, Charles Le Roy, 1869
<i>Los Angeles.</i>		Simms, Giles G. C., 1860
Preuss, Edward A.,	1866	Tyson, Samuel F., M.D., 1857
<i>Napa City.</i>		
Colman, Frederick W.,	1865	CONNECTICUT.
<i>Mare Island.</i>		
Anderson, Joseph E.,	1869	<i>New Haven.</i>
<i>Petaluma.</i>		Daggett, Alfred, Jr., 1865
Maynard, Frederick T.,	1864	
<i>Vallejo, Solano Co.</i>		<i>Waterbury.</i>
Frost, James,	1870	Dikeman, Nathan, 1865
Topley, James,	1869	
<i>Visalia, Tulare Co.</i>		DELAWARE.
Blake, James W.,	1869	
COLORADO.		<i>Wilmington.</i>
<i>Central City.</i>		Bringhurst, Ferris, 1862
Best, John,	1866	McInall, Edward, Jr., 1867
COLUMBIA, DISTRICT OF.		Shoemaker, Benjamin, 1867
<i>Washington.</i>		Shoemaker, Charles, 1867
Bannvart, Charles A.,	1856	Simms, John H., M.D., 1867
Bury, E. B.,	1870	Smith, Linton, M.D., 1870
Callan, James N.,	1857	
<i>New Castle.</i>		
<i>FLORIDA.</i>		
<i>Fort George.</i>		
Rollins, John Francis,		
GEORGIA.		
<i>Atlanta.</i>		
Schumann, Theodore,		
<i>Augusta.</i>		
Land, Robert H.,		
		1859

<i>Macon.</i>		Jamieson, Thomas N., . . .	1869
Zeilin, John Henry, . . .	1859	Jones, Charles S., . . .	1869
<i>Milledgeville.</i>		Mahla, Frederick, Ph. D., . . .	1864
Clark, John M., . . .	1857	McPherson, George, . . .	1865
Grieve, Fleming C., . . .	1859	Mead, Nehemiah, . . .	1865
Cotting, William A., . . .	1869	Mill, James W., . . .	1864
<i>ILLINOIS.</i>		Milleman, Philip L., . . .	1866
<i>Bloomington.</i>		Murray, Allen F., . . .	1869
Dyson, Dunbar S., . . .	1856	O'Farrell, Henry T., . . .	1869
Thompson, Robert, . . .	1860	Paine, James D., . . .	1857
<i>Bradford, Stark Co.</i>		Parsons, John, . . .	1865
Plummer, David G., . . .	1869	Patterson, Theodore H., . . .	1869
<i>Chicago.</i>		Poorman, Samuel F., . . .	1869
Bartlett, N. Gray, . . .	1864	Reinhold, William, . . .	1866
Biroth, Henry, . . .	1865	Sargent, Ezekiel H., . . .	1864
Blaney, James V. Z., M.D., . . .	1865	Schroeder, Nobel, . . .	1866
Bliss, Sylvester S., . . .	1865	Sharp, J. Perine, . . .	1865
Blocki, William F., . . .	1863	Smith, Albert A., . . .	1869
Borcherdt, Julius C., . . .	1867	Strehl, Louis C., . . .	1866
Breed, Marvin A., . . .	1866	Sweet, Henry, . . .	1865
Brown, Thomas, . . .	1865	Tourtelot, Emil P., . . .	1866
Bryan, Alexander B., . . .	1865	Tourtelot, Frank J., . . .	1866
Bryan, Frederick A., . . .	1865	Vanderburgh, Abram C., . . .	1869
Buck, George, . . .	1860	Whitfield, Thomas, . . .	1865
Curth, Nicholaus T., . . .	1865	Willard, Joseph, . . .	1865
Ebert, Albert E., . . .	1864	Wilson, Julius H., . . .	1869
Ehrman, John W., . . .	1867	Woltersdorf, Louis, . . .	1865
Fiske, Calvin J., . . .	1869	<i>Galesburg.</i>	
Fitch, Charles H., . . .	1869	Clark, Albert B., Jr., . . .	1868
Fredigke, Charles Christian, . . .	1869	Johnson, Newton A., . . .	1869
Fuller, Henry W., . . .	1865	<i>Hyde Park.</i>	
Fuller, Oliver F., . . .	1869	Palmer, Hosea W., . . .	1870
Gale, Edwin O., . . .	1857	<i>Livingston.</i>	
Gale, William H., . . .	1857	Gallagher, James, . . .	1865
Garrison, Herod Dailey, . . .	1869	<i>Peoria.</i>	
Grassly, Charles William, . . .	1868	Colburn, Walter, . . .	1869
Hambright, George M., . . .	1865	Miles, Benjamin Franklin, M.D., . . .	1869
Hanning, John T., . . .	1864	Singer, Peter J., . . .	1869
Heuermann, Henry W., . . .	1869	<i>Quincy.</i>	
Heylman, Charles, . . .	1865	Malone, Charles F., . . .	1869
Hirsh, Joseph, . . .	1869	<i>Waukegan, Lake Co.</i>	
Hooper, John H., . . .	1865	Ingalls, Albert O., . . .	1869
Jacobus, Judson S., . . .	1870		

<i>Young America.</i>		<i>Leavenworth.</i>	
Peirpoint, Newton, . . .	1869	Brown, Robert J., . . .	1862
INDIANA.		Harrop, Joseph W., . . .	1869
<i>Auburn.</i>		Parham, Robert, . . .	1868
Ehlers, John H., . . .	1867	Physick, Henry Sanford, . . .	1870
<i>Fort Wayne.</i>		Price, Joseph Warren, . . .	1869
Van Sweringen, Hiram, . . .	1865	Smith, Thomas Edward, . . .	1869
<i>Indianapolis.</i>		Topeka.	
Miller, Edward T., . . .	1859	Greene, Henry S., . . .	1869
Schrader, Henry, . . .	1869	KENTUCKY.	
Sloan, George W., . . .	1857	<i>Covington.</i>	
<i>La Porte.</i>		Mauss, Richard G., . . .	1869
West, Frederick, . . .	1866	Nodler, Peter, . . .	1870
<i>Logansport.</i>		<i>Louisville.</i>	
Brown, George W., . . .	1865	Brown, James E., . . .	1870
<i>New Albany.</i>		Carey, George H., . . .	1866
Schribner, Benjamin Franklin,	1858	Colgan, John, . . .	1867
IOWA.		Diehl, Charles Lewis, . . .	1868
<i>Burlington.</i>		Fletcher, Norman, . . .	1867
Matthews, Charles C., . . .	1869	Hughes, Henry A., . . .	1857
<i>Des Moines.</i>		Jenkins, Thomas E., M.D., . . .	1866
Hunt, Nathan W., . . .	1869	Jones, Simon N., . . .	1870
<i>Guttenberg, Clayton Co.</i>		Kern, Flora, Jr., . . .	1868
Vogel, Richard, . . .	1867	Krim, John M., . . .	1867
<i>Le Mars, Plymouth Co.</i>		Newman, George A., . . .	1866
Bennett, Charles H., . . .	1869	Pfingst, Ferdinand J., . . .	1867
KANSAS.		Rademaker, Charles J., . . .	1867
<i>Fort Scott.</i>		Sacksteder, Francis, . . .	1867
Connor, Lucius E., . . .	1869	Strassel, William, . . .	1870
<i>Junction City.</i>		Wilder, Graham, . . .	1868
Porter, Edward T., . . .	1867	LOUISIANA.	
<i>Lawrence.</i>		<i>New Orleans.</i>	
Leis, George, . . .	1869	Bates, Louis A., . . .	1869
		Keffer, Frederick A., . . .	1862
		Keffer, William P., . . .	1866
		Pope, John H., . . .	1860
		Viallon, Paul L., . . .	1870
		<i>New Iberia.</i>	
		Lee, James A., . . .	1858
		<i>Thibodeaux.</i>	
		Thibodeaux, Joseph G., . . .	1870

MAINE.				
<i>Augusta.</i>				
Partridge, Charles K., . . .	1867	Jefferson, John H. B., . . .	1868	
<i>Bangor.</i>		Jennings, N. Hynson, . . .	1857	
Harlow, Noah Smith, . . .	1859	Kirby, Thomas E., M.D., . . .	1868	
<i>Camden.</i>		Lampanius, Charles A., . . .	1867	
Sherman, Oliver G., M.D., . . .	1869	Lauer, Michael J., . . .	1865	
<i>Eastport.</i>		Lautenbach, Robert, M.D., . . .	1870	
Shead, Edward E., . . .	1866	Leamy, James C., . . .	1867	
<i>Lewiston.</i>		Lilly, Alonzo, Jr., . . .	1863	
Cook, John G., . . .	1859	McDaniel, James E., . . .	1860	
<i>Portland.</i>		Monsarrat, Oscar, . . .	1856	
Cummings, Henry T., M.D., . . .	1858	Moore, J. Faris, . . .	1856	
Hay, Henry H., . . .	1867	Morrison, S. Ellwood, . . .	1868	
Phillips, Walter F., . . .	1859	Muth, John P., . . .	1864	
<i>Waterville.</i>		O'Brien, Joseph C., . . .	1868	
Percival, George G., . . .	1868	Osburn, William H., . . .	1870	
MARYLAND.		Perkins, Elisha H., . . .	1857	
<i>Baltimore.</i>		Potts, Jesse Newport, . . .	1870	
Andrews, George W., . . .	1856	Reifsneider, William E., . . .	1864	
Baxley, J. Brown, . . .	1856	Roberts, Joseph, . . .	1856	
Block, John, . . .	1860	Russell, Eugene J., . . .	1856	
Brown, Alexander E., . . .	1863	Russell, E. Walton, . . .	1868	
Brown, William H., . . .	1863	Sappington, Richard, M.D., . . .	1870	
Burrough, Edward Ewalt, . . .	1869	Sharp, Alpheus P., . . .	1855	
Burrough, Horace, . . .	1869	Skinner, Joseph G., . . .	1864	
Caspari, William, . . .	1856	Smith, Edward A., . . .	1870	
Dannattel, George F., . . .	1867	Smith, J. Jacob, . . .	1856	
Dohme, Charles E., . . .	1868	Suding, Henry A., . . .	1870	
Dohme, Lewis, . . .	1859	Tilyard, Charles L., . . .	1867	
Donavin, Matthew W., . . .	1867	Thompson, William S., . . .	1856	
Duke, Augustin Whitfield, . . .	1870	Thompson, Wilbur F., . . .	1870	
Elliott, Henry A., . . .	1859	Thomsen, John J., . . .	1856	
Elliott, William, . . .	1868	Webb, John A., . . .	1870	
Emich, Columbus V., . . .	1863	Winkleman, John H., . . .	1864	
Frames, James P., . . .	1868	Wolf, Joseph A., . . .	1860	
German, John W., . . .	1870	Worthington, Joseph Muse, . . .	1868	
Gossman, Adam J., . . .	1870	<i>Annapolis.</i>		
Hancock, John F., . . .	1863	Button, Elijah, . . .	1870	
Hancock, John H., . . .	1870	Street, Daniel B., . . .	1867	
		<i>Cumberland.</i>		
		Campbell, John H. B., . . .	1870	
		<i>Frederick.</i>		
		Pettit, Henry M., . . .	1860	
		<i>Hagerstown.</i>		
		Graefie, Frederick Alexander, . . .	1870	
		Winter, Jonas, . . .	1868	

MASSACHUSETTS.

Boston.

Atkinson, William D., Jr.,	. 1865	Nowell, William F.,	. .	. 1867
Atwood, Charles H.,	. 1856	Parker, Joseph L.,	. .	. 1864
Babcock, James F.,	. 1865	Patten, Ichabod Bartlett,	. .	. 1858
Babo, Leopold,	. 1859	Perry, Edward H.,	. .	. 1865
Bassett, Charles H.,	. 1867	Restieaux, Thomas,	. .	. 1853
Boyden, Ashel,	. 1858	Ricker, George D.,	. .	. 1858
Brown, Joseph Taylor,	. 1859	Rogers, Charles F.,	. .	. 1860
Brown, Joseph Taylor, Jr.,	. 1869	Sheppard, Samuel A. D.,	. .	. 1865
Brown, William,	. 1858	Simmons, Francis W.,	. .	. 1865
Burnett, Joseph,	. 1852	Smalley, Elijah,	. .	. 1860
Butterworth, John,	. 1860	Stuart, George A., M.D.,	. .	. 1867
Campbell, Isaac T.,	. 1859	Tompkins, Orlando,	. .	. 1859
Canning, Henry,	. 1865	Tower, Levi, Jr.,	. .	. 1860
Carter, Solomon,	. 1865	Turner, T. Larkin,	. .	. 1853
Clock, Frank B.,	. 1865	Underwood, Charles G.,	. .	. 1865
Colcord, Samuel M.,	. 1852	Warren, Henry,	. .	. 1859
Colton, James B.,	. 1865	Whittemore, Eugene,	. .	. 1865
Connor, Thomas J.,	. 1867	Wiley, Abraham S.,	. .	. 1857
Cutler, Edward Waldo,	. 1859	Wilkins, Daniel G.,	. .	. 1865
Dana, Alfred C.,	. 1859	Wilson, Benjamin O.,	. .	. 1859
Doliber, Thomas,	. 1859	Woodbridge, George W.,	. .	. 1859
Doolittle, Erastus H.,	. 1865			
Dows, Gustavus D.,	. 1865			
Dyer, J. Howes,	. 1865			
Eaton, Charles I.,	. 1867			
French, George W.,	. 1865			
Fowle, Henry D.,	. 1858			
Gleeson, James A.,	. 1859			
Gleeson, Michael H.,	. 1859			
Hazeltine, Charles Benjamin R.,	1867			
Henchman, Daniel,	. 1858			
Hoagland, Pratt R.,	. 1868			
Hollis, Thomas,	. 1858			
Horton, William Francis,	. 1869			
Jenkins, Luther L.,	. 1867			
Kent, Robert R.,	. 1855			
Kidder, Darius B.,	. 1858			
Leary, John Thomas,	. 1869			
Lincoln, Henry Ware,	. 1853			
Littlefield, Alvah,	. 1856			
Lyon, Charles H., Jr.,	. 1858			
Markoe, George Frederick H.,	. 1863			
Melvin, James S.,	. 1858			
Metcalf, Theodore,	. 1857			

Brighton.

Warren, William,	. .	. 1867
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Brookline.

Bird, George W.,	. .	. 1867
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Cambridge.

Hubbard, John H.,	. .	. 1866
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James, Thomas P.,	. .	. 1857
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Cambridgeport.

Bayley, Augustus R.,	. .	. 1859
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Orne, Joel S.,	. .	. 1859
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Richardson, James H.,	. .	. 1868
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Thayer, Henry,	. .	. 1858
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Charlestown.

Dodge, Levi G.,	. .	. 1859
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Kettell, George P.,	. .	. 1867
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Melzar, Augustus P.,	. .	. 1856
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Stacey, Benjamin Franklin,	. .	. 1860
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Chester.

Buck, John,	. .	. 1855
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Dorchester.

Sanborn, Jeremiah, Jr.,	. .	. 1865
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<i>East Abington.</i>		<i>Salem.</i>	
Arnold, Ezra W., . . .	1868	Emerton, James, . . .	1859
Estes, Joseph Josselyn, . . .	1870		
<i>Feltonville.</i>		<i>Springfield.</i>	
Safford, William Augustus, .	1865	Bigelow, Edmund, . . .	1860
		Hooker, John, . . .	1867
<i>Great Barrington.</i>		<i>Worcester.</i>	
Whiting, Frederick T., . . .	1868	Bright, James Evesson, . . .	1868
<i>Hingham.</i>		McConville, Michael S., . . .	1859
Hunt, James L., . . .	1865	McConville, Thomas A., . . .	1864
<i>Ipswich.</i>		Scott, David, . . .	1855
Geyer, Andrew, . . .	1865	Scott, Nelson R., . . .	1859
<i>Lawrence.</i>		<i>MICHIGAN.</i>	
Whitney, Henry M., . . .	1859	<i>Almont.</i>	
		Richardson, Daniel W., . . .	1866
<i>Lowell.</i>		<i>Ann Arbor.</i>	
Bailey, Frederick, . . .	1869	Douglass, Samuel H., M.D., . . .	1869
Kidder, Samuel, Jr., . . .	1859	Eberbach, Ottmar, . . .	1869
		Mann, Emanuel, . . .	1866
<i>Lynn.</i>		<i>Battle Creek.</i>	
Proctor, Benjamin, . . .	1859	Wardell, Robert C., . . .	1860
<i>New Bedford.</i>		<i>Bay City.</i>	
Blake, James E., . . .	1866	Street, Job F., . . .	1869
<i>Newburyport.</i>		<i>Chelsea.</i>	
Goodwin, William W., . . .	1858	Glazier, George P., . . .	1863
Smith, Samuel A., . . .	1859	<i>Detroit.</i>	
<i>North Adams.</i>		Biddle, Hiram S., . . .	1866
Holden, Henry C., . . .	1870	Chapman, Joseph R., . . .	1869
Pettis, Newton C., . . .	1868	Duffield, Samuel P., Ph. D., . . .	1859
<i>North Andover.</i>		Fletcher, Francis E., . . .	1866
Berrian, George W., Jr., . . .	1857	Griffith, John H., . . .	1866
<i>North Bridgewater.</i>		Johnston, William, . . .	1860
Bixby, Charles C., . . .	1859	Leuschner, Otto, . . .	1857
<i>Rockport.</i>		L'Hommedieu, Charles, . . .	1866
Blatchford, Eben, . . .	1857	Ronnefeld, Theodore, . . .	1866
Blatchford, Eben, Jr., . . .	1865	Vernon, James, . . .	1866
<i>Roxbury.</i>		<i>East Saginaw.</i>	
Savell, Charles E., . . .	1860	Dunk, Alfred A., . . .	1867
		Garrigues, Samuel S., Ph. D., . . .	1855
		Melchers, Henry, . . .	1869
		Simoneau, Leander, . . .	1869

<i>Jackson.</i>		1866	Chamberlain, Guilford T.,	1858
Holland, James M.,		1866	Crawford, William Harper,	1864
Meseroll, James C.,		1867	Crawley, Francis X.,	1869
Weeks, Eugene J.,		1866	Forgey, Alfred V.,	1865
<i>Marine City.</i>			Glenn, T. Smith,	1870
Backus, James W.,		1867	Hendel, Samuel D.,	1858
<i>Monroe.</i>			Jones, Charles K.,	1867
Weiss, Julius,		1866	Jones, Isaac E.,	1858
<i>Muskegon.</i>			Kalb, Theodore,	1864
Wagener, Samuel H.,		1869	Kirkbride, Joseph C.,	1869
<i>Portsmouth.</i>			Leitch, Arthur,	1860
Taylor, Joseph E.,		1869	Mallinckrodt, Gustavus,	1869
<i>Saginaw City.</i>			Mallinckrodt, Edward,	1869
Moll, William,		1869	Massot, Eugene L.,	1857
<i>Schoolcraft.</i>			McBride, James,	1864
James, George R.,		1869	Meyer, Christian F. G.,	1860
<i>Ypsilanti.</i>			O'Gallagher, James, M.D.,	1858
Frost, Josiah B.,		1866	Primm, Hubert,	1855
<i>MINNESOTA.</i>			Randals, Evermont,	1865
<i>Mankato.</i>			Rano, Charles O.,	1866
Austin, George W.,		1865	Sander, Enno, Ph. D.,	1858
<i>Minneapolis.</i>			Schaeffer, Henry W.,	1868
Savory, George Augustus,		1869	Sennewald, Ferdinand W.,	1865
Shuey, William H.,		1864	Steer, Justin,	1869
<i>MISSISSIPPI.</i>			Tanton, Thomas,	1865
<i>Columbus.</i>			<i>Kansas City.</i>	
Osborne, Hampden,		1869	Brackett, Aurick S.,	1868
<i>Jackson.</i>			Breunert, Augustus,	1868
Ash, Matthew F.,		1856	Mann, Albert H.,	1869
Buck, John T.,		1868	Wilson, Richard E.,	1869
<i>MISSOURI.</i>			<i>Mexico, Adrian Co.</i>	
<i>St. Paul.</i>			Llewellyn, John Frederick,	1867
Sweeney, Robert Ormsby,		1866	<i>Weston.</i>	
<i>NEW HAMPSHIRE.</i>			Parr, John C.,	1856
<i>Aurora.</i>			<i>NEVADA.</i>	
Green, Alexander Alfred,		1868	<i>Concord.</i>	
<i>Concord.</i>			Morgan, James,	1859
<i>Dover.</i>			Tufts, Charles Augustus,	1858
<i>St. Louis.</i>			Bugge, Andreas Valdemar,	1868

<i>Exeter.</i>		<i>Mercein, James R., . . .</i>	<i>1865</i>
Merrill, Charles A., . . .	1858	<i>Morgan, James F., . . .</i>	<i>1865</i>
<i>Keene.</i>		<i>White, George H., . . .</i>	<i>1868</i>
Dort, Oliver Gilman, . . .	1858	<i>Madison.</i>	
<i>Manchester.</i>		Muchmore, William Fletcher,	1868
Littlefield, Chauncey B., . . .	1868	<i>Morristown.</i>	
<i>New Market.</i>		<i>Dalrymple, Charles H., . . .</i>	<i>1860</i>
Dearborn, George L., . . .	1858	<i>Voorhees, William S., . . .</i>	<i>1868</i>
<i>Portsmouth.</i>		<i>Mount Holly.</i>	
Thacher, Joseph Haven, . . .	1859	White, Aaron Smith, . . .	1860
<i>Somersworth.</i>		<i>Newark.</i>	
Jones, Charles Mortimer, . . .	1869	<i>Badger, Charles W., . . .</i>	<i>1870</i>
Moore, George, . . .	1859	<i>Dreher, Ernest, . . .</i>	<i>1869</i>
NEW JERSEY.		<i>Havenstein, Alexander, . . .</i>	<i>1870</i>
<i>Bordentown.</i>		<i>Jacques, Isaac W., . . .</i>	<i>1869</i>
Hankins, Bunting, . . .	1865	<i>Kelley, Edward F., . . .</i>	<i>1870</i>
<i>Burlington.</i>		<i>Lee, John B., . . .</i>	<i>1870</i>
Allinson, William J., . . .	1862	<i>Littell, William M., . . .</i>	<i>1870</i>
Vandegrift, John A., . . .	1867	<i>Nichols, Edward P., . . .</i>	<i>1870</i>
<i>Camden.</i>		<i>Peters, Alexander C., . . .</i>	<i>1868</i>
Brown, Albert P., . . .	1870	<i>Smith, Charles B., . . .</i>	<i>1868</i>
De la Cour, Joseph L., . . .	1870	<i>Vandervoord, Ransford W., . . .</i>	<i>1870</i>
Test, Alfred W., . . .	1870	<i>Van Gieson, Theron W., . . .</i>	<i>1869</i>
<i>Elizabeth.</i>		<i>New Brunswick.</i>	
Barnaby, Thomas J., . . .	1870	Rust, William, . . .	1870
<i>Elizabethport.</i>		<i>Plainfield.</i>	
Frohwein, Richard, . . .	1867	Voorhees, William H., . . .	1868
<i>Hackensack.</i>		<i>South Amboy.</i>	
Earle, Sylvester Monteith, . . .	1864	Jacques, George W., . . .	1869
<i>Hoboken.</i>		<i>Trenton.</i>	
Fehr, Julius, . . .	1870	Rickey, Randal, . . .	1870
<i>Jersey City.</i>		<i>Vincentown.</i>	
Abernethy, Maxwell, . . .	1865	Heisler, Jacob, . . .	1868
Kirsten, Adolph, . . .	1867	NEW MEXICO.	
Laird, William R., . . .	1867	<i>Santa Fe.</i>	
McKechnie, William W., . . .	1868	Krummeck, Jacob, . . .	1867

NEW YORK.			
<i>New York City.</i>			
Aspinwall, James S., . . .	1855	Kiersted, Henry, . . .	
Balluff, Paul, . . .	1860	Kiersted, Henry T., . . .	
Bedford, Peter Wendover,	1859	Kimmel, Henry, . . .	
Billings, Henry M., . . .	1869	Krehbiel, Gustavus, . . .	
Blake, Alexander V., . . .	1860	Lazell, Lewis T., . . .	
Brewer, William A., . . .	1858	Marsh, Edward H., . . .	
Carle, John, Jr., . . .	1860	Mason, Alfred, . . .	
Cassebeer, Henry A., . . .	1858	McKesson, John, Jr., . . .	
Chandler, Charles F., Ph. D., . . .	1867	Milhau, Edward L., . . .	
Coddington, Isaac, . . .	1855	Milhau, John, . . .	
Coggeshall, George D., . . .	1852	Molvitz, Ernest, . . .	
Colby, Ferris W., . . .	1865	Neergaard, William, . . .	
Covell, Thomas Jefferson,	1864	Onderdonk, William H. C., . . .	
Currie, John H., . . .	1858	Osmun, Charles A., . . .	
Davis, Benjamin, . . .	1869	Peixotto, Moses L. M., . . .	
Dege, George F., . . .	1868	Porter, George G., . . .	
Ditman, Andrew J., . . .	1868	Ramsperger, Gustavus, . . .	
De la Vergne, George W., . . .	1857	Reinold, Bernard H., . . .	
Dunn, Adolph G., . . .	1862	Rice, Charles, . . .	
Faber, John, . . .	1857	Rice, Lucian M., . . .	
Fisher, William, . . .	1862	Robbins, Daniel C., . . .	
Frey, John, . . .	1866	Sands, Robert A., . . .	
Fougera, Edmund C., . . .	1867	Sands, George G., . . .	
Frohwein, Max, . . .	1865	Schofield, James L., . . .	
Frohwein, Theobald,	1862	Shedden, John W., . . .	
Gardiner, Warren B., . . .	1860	Sheils, George E., . . .	
Gilmore, John W., . . .	1867	Skelley, James T., . . .	
Gellatly, William A., . . .	1858	Southwick, George W., . . .	
Giles, William M., . . .	1860	Starr, Thomas, . . .	
Goecke, Augustus Gottfried,	1867	Weaver, James, . . .	
Green, Thomas T., . . .	1858	Weismann, Augustus W., . . .	
Gridley, Junius, . . .	1858	Wenck, George J., . . .	
Hale, Frederick, . . .	1855	Westerfield, Joseph H., . . .	
Harner, James M., . . .	1867	Wheeler, Lucian F., . . .	
Haviland, Henry, . . .	1857	Whitney, William H., . . .	
Hays, Benjamin E., . . .	1866	Wickham, William Hull, . . .	
Hays, David, . . .	1867	Wright, George, . . .	
Hebberling, Gottfried, . . .	1867	Wright, William, Jr., . . .	
Hegeman, William, . . .	1858	<i>Brooklyn.</i>	
Higgins, James S., . . .	1862	Barnaby, James Otis, . . .	
Hoffmann, Frederick, Ph. D., . . .	1867	Bassett, Francis M., . . .	
Hohenthal, Charles F. L., . . .	1865	Baylis, William E. P., . . .	
Hudnut, Alexander, . . .	1857	Burt, Theodore F., . . .	
Johnson, Edward L., . . .	1860	Close, George C., . . .	
		Curtiss, Charles Grenville, . . .	
		Davies, Robert J., . . .	
		1858	

Day, Carlos E.,	1870	<i>Lockport.</i>
Dunn, John A.,	1867	Ruete, Theodore W., . . . 1870
Dupuy, Eugene,	1852	
Goodman, Bernard,	1867	<i>Middletown.</i>
Heydenreich, Emil,	1867	King, James T., 1859
Heydenreich, F. Victor,	1860	Rogers, William H., . . . 1869
Jones, Thomas,	1868	
Kitchen, Charles W.,	1865	<i>New Lebanon.</i>
Lewis, Thomas,	1867	Tilden, Henry A., 1858
Metcalf, Tristram W.,	1857	
Newman, George A.,	1865	<i>New Rochelle.</i>
Niebrugge, John H.,	1861	Welling, Samuel G., . . . 1860
Ollif, James H.,	1867	
Owens, Richard J.,	1860	<i>Plattsburgh.</i>
Peduzzi, George S.,	1861	Cady, Hiram Walworth, . . . 1870
Pyle, Cyrus,	1859	
Rhodes, Robert R., M.D.,	1865	<i>Potsdam.</i>
Sheets, James Addison,	1870	Thatcher, Hervey D., . . . 1865
Snyder, Ambrose C.,	1867	
Squibb, Edward R., M.D.,	1858	<i>Poughkeepsie.</i>
Tartiss, Alfred J.,	1867	Sherwood, Hezekiah S., . . . 1870
Vincent, William,	1870	
Watson, William J.,	1860	<i>Rochester.</i>
Wynn, William,	1867	Blauw, Hippolytus A., . . . 1856
		Lane, Alfred S., 1857
<i>Albany.</i>		
Champlin, Erastus N.,	1864	<i>Rondout.</i>
Cutler, John W.,	1870	Laycock, Washington, . . . 1857
McMurdy, Robert S., M.D.,	1861	
		<i>Sag Harbor.</i>
<i>Buffalo.</i>		
Peabody, William H.,	1857	Lobstein, J. F. Daniel, . . . 1868
		<i>Saratoga Springs.</i>
<i>Elmira.</i>		
Morse, Henry C.,	1868	Fish, Charles F., 1866
		Fish, George H., 1869
<i>Fishkill, on Hudson.</i>		
Moith, Augustus Theodore,	1860	Stirling, Charles N., 1867
		<i>West New Brighton, L. I.</i>
<i>Flushing.</i>		
Contant, James L.,	1868	McRae, William H., 1861
		Musgiller, Francis C., 1867
<i>Greenpoint.</i>		
Fordham (St. John's College).		<i>West Farms.</i>
Conway, John F.,	1862	Webb, Henry E., 1865
		<i>Yonkers.</i>
Tapken, Theodore,	1868	Stephens, William G., 1860
		Toplis, Robert J., 1868

NORTH CAROLINA.		<i>Alliance.</i>
<i>Chapel Hill.</i>		Barr, Peter H., . . . 1867
Saunders, Richard B., . . .	1858	
<i>Raleigh.</i>		<i>Canton.</i>
Menninger, Henry J., M.D., .	1866	Geiger, Conrad John, . . . 1866
		Geiger, Walter P., . . . 1867
<i>Washington.</i>		
Gallagher, Charles K., . . .	1857	<i> Circleville.</i>
<i>OHIO.</i>		Fickardt, George H., . . . 1864
<i>Cincinnati.</i>		
Adderly, William H., . . .	1854	<i>Cleveland.</i>
Arons, William C., . . .	1854	Gaylord, Henry C., . . . 1869
Berghausen, Edward, . . .	1864	
Chapman, William B., . . .	1852	<i>Columbus.</i>
Eger, George, . . .	1864	Ritson, Alfred, . . . 1870
Fennel, Adolphus, . . .	1864	
Foertmyer, Adolphus W., .	1864	<i>Dayton.</i>
Foertmyer, Charles, . . .	1864	Crawford, John S., . . . 1868
Fratz, John G., . . .	1864	Dietrich, Jacob W., . . . 1856
Gordon, Oliver F., . . .	1857	
Gordon, William J. M., .	1854	<i>Dresden.</i>
Greve, Theodore L. A., .	1864	Dorsey, Thomas B., . . . 1866
Heineman, Otto, . . .	1864	
Helman, Charles M., . . .	1864	<i>Logan.</i>
Henkel, Augustus, . . .	1865	Harrington, Frank, . . . 1869
Hill, Alfred C., . . .	1864	
Hill, Hiram H., . . .	1864	<i>Navarre.</i>
Hottendorf, Augustus, . . .	1864	Garver, Alexander, . . . 1866
Judge, John F., . . .	1866	Grossklaus, John F., . . . 1859
Karrmann, William, . . .	1864	
Keeshan, John, . . .	1864	<i>Piqua.</i>
Lloyd, John M., . . .	1870	Drake, Robert S., . . . 1867
Markward, James, . . .	1864	
McPherson, George B., .	1867	<i>Salem, Columbiana Co.</i>
Merrell, William S., . . .	1854	Hawkins, M. Smith, . . . 1870
Miller, Robert T., . . .	1869	
Odena, Frederick M., . . .	1866	<i>Springfield.</i>
Reinlein, Paul, . . .	1856	Casper, Thomas J., M.D., . . . 1867
Reum, Hermann F., . . .	1864	
Roemer, Daniel, . . .	1865	<i>Toledo.</i>
Scott, John, . . .	1854	Daniels, Thomas, . . . 1866
Tully, Andrew J., . . .	1862	
Wayne, Edward S., . . .	1854	<i>Utica.</i>
Wells, Jacob David, . . .	1864	Boyd, Abraham, . . . 1869
Yorston, Matthew M., . . .	1864	
		<i>Xenia.</i>
		Allen, Alexander B., . . . 1869

<i>Youngstown.</i>		Grove, John E., . . .	1868
Neal, Leander, . . .	1858	Haenchen, Charles Eugene,	1865
<i>OREGON.</i>		Hance, Edward H., . . .	1857
<i>Portland.</i>		Hanceck, Charles W., . . .	1868
Hodge, Charles, . . .	1859	Hassard, Peter J., . . .	1858
<i>PENNSYLVANIA.</i>		Heintzelman, Joseph A., . . .	1858
<i>Philadelphia.</i>		Hubbell, Orange Scott, . . .	1857
Abell, Walter B., . . .	1867	Huddart, John F., . . .	1870
Angney, John R., . . .	1867	Hurst, John C., . . .	1868
Archibald, Henry C., . . .	1867	Jefferson, Charles L., . . .	1869
Ashton, George H., . . .	1864	Jenks, William J., . . .	1858
Bakes, William C., . . .	1864	Johnson, Benjamin F., . . .	1859
Bauer, Louis G., . . .	1867	Jones, Daniel S., . . .	1859
Bispham, James L., . . .	1865	Jones, Edward C., . . .	1864
Blair, Andrew, . . .	1865	Jones, Samuel T., . . .	1867
Blair, Henry C., . . .	1868	Kay, Isaac W., . . .	1870
Blinkhorn, George, . . .	1860	Keeney, Caleb R., . . .	1868
Boring, Edwin McC., . . .	1867	Keys, Roger, . . .	1868
Bower, Henry, . . .	1860	Krause, William, . . .	1870
Bower, Henry A., . . .	1868	Lancaster, Thomas A., . . .	1859
Bowman, Henry K., . . .	1869	Lippincott, Henry B., . . .	1868
Bullock, Charles, . . .	1857	Maisch, John M., . . .	1856
Bunting, Samuel S., . . .	1857	McCollin, Samuel Mason, . . .	1864
Caldwell, James Marshall, . . .	1866	McIntyre, William, . . .	1868
Campbell, Samuel, . . .	1864	Mellor, Alfred, . . .	1864
Carberry, P. Joseph L., . . .	1870	Miller, Adolphus W., . . .	1868
Chapman, Samuel, M.D., . . .	1857	Milligan, Decatur, . . .	1867
Coombe, Thomas R., . . .	1860	Moore, Joachim B., . . .	1860
Cramer, Henry, . . .	1867	Needles, Caleb H., . . .	1868
Crew, J. Lewis, . . .	1860	Parrish, Clemonson, . . .	1868
Dobbins, Edward T., . . .	1867	Parrish, Dillwyn, . . .	1857
Eberle, Charles L., . . .	1865	Parrish, Edward, . . .	1852
Eddy, Henry C., . . .	1869	Peck, Henry T., . . .	1868
Eldridge, George W., . . .	1865	Perot, E. Raphael, . . .	1858
Ellis, Charles, . . .	1852	Perot, T. Morris, . . .	1857
Ellis, Evan T., . . .	1857	Pile, Wilson H., M.D., . . .	1857
England, Robert, . . .	1868	Platzer, Robert, . . .	1865
Erben, John S., . . .	1868	Preston, David, . . .	1868
Evans, William, Jr., . . .	1860	Procter, William, Jr., . . .	1853
Everhart, Augustus, . . .	1867	Raser, William H., . . .	1869
Everson, John C., . . .	1863	Reed, Philemon S., . . .	1870
Fox, Peter P., . . .	1869	Remington, Joseph P., . . .	1867
Grahame, Israel J., . . .	1856	Riley, Charles W., . . .	1868
Gristock, Charles F., . . .	1864	Rittenhouse, Henry N., . . .	1857
		Robbins, Alonzo, . . .	1865
		Roche, Edward M., . . .	1868
		Roche, William F., . . .	1868

Rosengarten, Mitchell G., . . .	1869	Columbia.
Scattergood, George J., . . .	1860	Meyers, James A., . . .
Seeger, Roland, . . .	1868	Hedenberg, James M., . . .
Shivers, Charles, . . .	1860	Von Nieda, John W., . . .
Shinn, James T., . . .	1860	Danville.
Shoemaker, George Y., . . .	1862	Heddenberg, James M., . . .
Shoemaker, Joseph L., . . .	1867	Nick, Hermann Charles, . . .
Shoemaker, Richard M., . . .	1869	Nick, William Frederick, Jr., . . .
Shryock, Allen, . . .	1868	Erie.
Simes, J. Henry C., M.D., . . .	1865	Nick, Hermann Charles, . . .
Smith, Ambrose, . . .	1857	Nick, William Frederick, Jr., . . .
Smith, Isaac W., . . .	1867	Harrisburg.
Snowden, George M., . . .	1857	Egle, William H., M.D., . . .
Souder, Joseph A., . . .	1870	Lancaster.
Taylor, Alfred B., . . .	1852	Heinitsh, Charles A., . . .
Taylor, William, . . .	1868	Hubley, Alfred A., . . .
Thompson, William B., . . .	1858	Lebanon.
Tilge, Frederick A., . . .	1868	Lemberger, Joseph L., . . .
Troth, Samuel F., . . .	1857	Muncy, Lycoming Co.
Van Orsdel, William E., . . .	1868	Evans, Clarence A., . . .
Vogelbach, Hermann A., . . .	1868	Oil City.
Warner, William R., . . .	1857	Griffith, Albert R., . . .
Weaver, J. Thornton, . . .	1868	Phillipsburg.
Webb, William H., M.D., . . .	1867	England, Howard, . . .
Weidemann, Charles A., . . .	1868	Pittsburg.
Wiegand, Thomas S., . . .	1857	Abel, Joseph, . . .
Wilder, Hans M., . . .	1866	Birch, John, . . .
Wilson, Adam H., . . .	1859	Cherry, James B., . . .
Wright, Archibald W., . . .	1868	Hostetter, Charles M., . . .
Ashland.		Mattern, John C., . . .
Delker, Frederick J., . . .	1868	Norgrave, Samuel K., . . .
Bellefonte.		Rankin, Alfred J., . . .
Green, Francis P., . . .	1864	Pottstown.
Bethlehem.		Cunningham, John M., . . .
Borhek, James T., Jr., . . .	1867	Potseville.
Eggert, Charles H., . . .	1857	Kennedy, George W., . . .
Luckenbach, Edward H., . . .	1870	Reading.
Meyers, Edward T., . . .	1867	Raser, John Heyl, . . .
Rau, Eugene A., . . .	1870	Stein, Jacob H., . . .
Selfridge, Matthew M., . . .	1858	Ziegler, Philip Milton, . . .
Chambersburg.		
Cressler, Charles H., . . .	1868	
Heyser, William, Jr., . . .	1856	

<i>South Bethlehem.</i>		VERMONT.	
Sieger, William S., . . .	1867	<i>Brandon.</i>	
<i>Towanda.</i>		Cheney, Judson Rollin, . . .	
Porter, Henry C., . . .	1869	<i>Rutland.</i>	
<i>Wilkesbarre.</i>		Higgins, Albert H., . . .	
Tener, Richard, Jr., . . .	1868	Lewis, Elam C., . . .	
<i>Williamsport.</i>		<i>St. Johnsbury.</i>	
Duble, Jesse Balderston, . . .	1870	Bingham, John C., . . .	
RHODE ISLAND.		VIRGINIA.	
<i>East Greenwich.</i>		<i>Alexandria.</i>	
Congdon, Albert J., . . .	1860	Stabler, Richard H., M.D., . . .	
<i>Newport.</i>		<i>Fredericksburg.</i>	
Blackman, Lyman R., . . .	1865	Cooke, James,	
Taylor, Robert J., . . .	1859	Hall, Marshall C.,	
<i>Providence.</i>		<i>Richmond.</i>	
Calder, Albert L., . . .	1859	Hazard, Thomas H., . . .	
<i>Westerley.</i>		Nolting, Adolphus W., . . .	
Lattimer, Robert F., . . .	1857	WISCONSIN.	
SOUTH CAROLINA.		<i>Beloit.</i>	
<i>Columbia.</i>		Collins, Charles Frederick Gove, 1859	
Heinitsh, Edward H., . . .	1867	<i>Fond du Lac.</i>	
Silliman, Lewis T., . . .	1859	Curran, Edward S.,	
TENNESSEE.		<i>Green Bay.</i>	
<i>Bolivar.</i>		Cherot, Leonce,	
Larwill, Joseph H., Jr., . . .	1858	<i>Maxomarie.</i>	
<i>Memphis.</i>		Senier, Alfred,	
Hampson, Hugh H., . . .	1869	<i>Milwaukie.</i>	
Jones, George H., . . .	1869	Drake, John R.,	
Robinson, James S., . . .	1869	<i>Prairie du Chien.</i>	
Steel, Frank L., . . .	1870	Wright, Edward M., . . .	
Steever, Henry C., . . .	1865	<i>Tomah.</i>	
<i>Nashville.</i>		Griggs, Osmon J.,	
Lillard, Benjamin, . . .	1869	1869	

DOMINION OF CANADA.

QUEBEC.		<i>Hamilton.</i>
<i>Montreal.</i>		
Edwards, John Baker, . . .	1868	Lawrence, Thomas, 1867
Gray, Henry R., . . .	1867	<i>London.</i>
Mercer, Nathan, . . .	1867	Moore, William Maurice, . . 1866
Nelson, Wolfred D. E., . .	1870	Saunders, William, 1860
		<i>Bradford.</i>
ONTARIO.		Morgan, George Webster, Jr., 1867
<i>Guelph.</i>		<i>Stratford.</i>
Petrie, Alexander Bain, . .	1867	Waugh, George W., 1862

WEST INDIES.

BERMUDA.		CUBA.
<i>Hamilton.</i>		<i>Cardenas.</i>
Heyl, James B.,	1863	Cahill, John F., 1870

U. S. OF COLOMBIA.

<i>Panama.</i>	
Herbruger, Florence C., . .	1867

LIST OF DECEASED MEMBERS.

HONORARY MEMBERS.

		Elected.	Died.
Bache, Franklin, M.D.,	Philadelphia, Pa.,	1857,	1864
Boullay, Pierre François Guillaume,	Paris, France,	1868,	1869
Farrington, Thomas,	Boston, Mass.,	1856,	1867
Robinet, Stephane,	Paris, France,	1868,	1869

ACTIVE MEMBERS.

		Elected.	Died.
Anderson, James H.,	New York, N. Y.,	1859,	1866
Bache, Charles L.,	San Francisco, Cal.,	1852,	1854
Balmer, James,	Baltimore, Md.,	1858,	1866
Barry, John W.,	Baltimore, Md.,	1856,	1861
Baynon, John,	Shrevesport, La.,	1858,	1862
Benzinger, John Sylvester,	Baltimore, Md.,	1860,	1869
Bigelow, Francis O.,	Medford, Mass.,	1859,	1868
Billings, Samuel J.,	New York, N. Y.,	1860,	1865
Blair, Henry C.,	Philadelphia, Pa.,	1855,	1862
Brown, John T.,	Boston, Mass.,	1859,	1860
Canavan, Benjamin,	New York, N. Y.,	1855,	1857
Carney, Charles Tibbets,	Boston, Mass.,	1858,	1862
Caspari, Charles,	Baltimore, Md.,	1856,	1870
Churchill, George W.,	Chelsea, Mass.,	1865,	1869
Clency, William F.,	Cincinnati, O.,	1859,	1865
Colby, Moses D.,	Boston, Mass.,	1859,	1870
Coon, Walter S.,	New York, N. Y.,	1858,	1861
Coppuck, Peter V.,	Mount Holly, N. J.,	1857,	1869
Creassman, Noah,	Waterloo, Canada West,	1863,	1864
Cunningham, James E.,	Pittsburg, Pa.,	1860,	1868
Cushman, Alexander,	New York, N. Y.,	1858,	1861
D'Evers, Henry Gaston,	Chicago, Ill.,	1865,	1870
Dodge, John P.,	New York, N. Y.,	1855,	1868
Easterbrook, Ray B.,	New York, N. Y.,	1858,	1868
Emanuel, Louis M., M.D.,	Linwood, Pa.,	1857,	1868

		Elected.	Died.
Fish, George B.,	Saratoga Springs, N. Y.,	1860,	1866
Fish, Henry F.,	New York, N. Y.,	1852,	1868
Forester, Richard,	Brooklyn, N. Y.,	1860,	1862
Gabaudan, Arthur W.,	New York, N. Y.,	1862,	1870
Gay, William,	Cambridgeport, Mass.,	1858,	1862
Gerhard, John C.,	Cincinnati, O.,	1862,	1866
Geyer, Andrew,	Boston, Mass.,	1858,	1855
Groneweg, Louis,	Cincinnati, O.,	1864,	1866
Hegeman, Frederick Augustus,	New York, N. Y.,	1855,	1860
Hill, Henry E.,	Detroit, Mich.,	1866,	1868
Jardella, Jerome B.,	Vincennes, Ind.,	1865,	1870
Jenkins, William Ellis,	Boston, Mass.,	1865,	1869
John, Frederick L.,	Philadelphia, Pa.,	1858,	1864
Junghanns, Charles A.,	Cincinnati, O.,	1858,	1862
Kennedy, Robert C.,	Cleveland, O.,	1865,	1868
Kent, Asbury,	Cincinnati, O.,	1854,	1860
Kent, William,	Cincinnati, O.,	1864,	1867
King, Henry,	New York, N. Y.,	1858,	1867
Knapp, Edwin E.,	Norwalk, Conn.,	1860,	1862
Laidley, Joseph,	Richmond, Va.,	1852,	1861
Lane, James B.,	Fitchburg, Mass.,	1858,	1867
Leitch, Alexander,	St. Louis, Mo.,	1858,	1868
Little, William B.,	Panama, U. S. Colombia,	1857,	1867
Longshaw, William, Jr., M.D.,	Bayou Sara, La.,	1858,	1864
McDonald, John,	Brooklyn, N. Y.,	1860,	1861
McIntyre, Timothy C., M.D.,	Washington, D. C.,	1858,	1862
Maxwell, James T.,	New York, N. Y.,	1855,	1860
Mayer, Ferdinand F.,	New York, N. Y.,	1859,	1869
Meakim, John (Pres. 1855-56),	New York, N. Y.,	1852,	1868
Muller, William H.,	Chicago, Ill.,	1865,	1870
Nagle, John G.,	Baltimore, Md.,	1868,	1869
Nadand, James W.,	Cincinnati, O.,	1864,	1868
Olliffe, William J., M.D.,	New York, N. Y.,	1858,	1866
Osgood, Samuel W.,	Davenport, Iowa,	1858,	1860
Palmer, Albert G.,	Washington, D. C.,	1858,	1860
Parker, Herschel,	Brooklyn, N. Y.,	1867,	1870
Peck, Samuel P.,	Bennington, Vt.,	1858,	1859
Philbrick, Samuel R., M.D.,	Boston, Mass.,	1852,	1859
Phillips, Llewellyn,	Baltimore, Md.,	1856,	1865
Polhemus, James L.,	Sacramento, Cal.,	1866,	1867
Pollard, Charles P.,	Marysville, Cal.,	1859,	1869
Pyle, J. Lindley,	Brooklyn, N. Y.,	1859,	1866
Rehfuss, Lewis,	Cincinnati, O.,	1854,	1856
Roberts, David,	Boston, Mass.,	1858,	1868
Rollman, Frederick,	Philadelphia, Pa.,	1862,	1864
Roemer, Daniel,	Cincinnati, O.,	1865,	1870

		Elected.	Died.
Sands, Jesse M.,	New York, N. Y.,	1860,	1867
Scully, Harmar D.,	Pittsburg, Pa.,	1858,	1866
Smith, Charles Augustus,	Cincinnati, O.,	1852,	1862
Smith, Edwin R.,	Monmouth, Ill.,	1862,	1869
Squire, William H.,	Germantown, Pa.,	1862,	1865
Steiner, Henry,	Philadelphia, Pa.,	1857,	1858
Stevens, Ashbel Mead,	Cincinnati, O.,	1854,	1860
Stevens, Rufus Walker,	Somersworth, N. H.,	1859,	1868
Sweetser, Thomas Augustus,	South Danvers, Mass.,	1859,	1860
Thomas, William,	Jersey City, N. J.,	1855,	1856
Waite, Samuel B.,	Washington, D. C.,	1858,	1862
Weyman, George W., Ph. D.,	Pittsburg, Pa.,	1858,	1864
White, Daniel F.,	Charlestown, Mass.,	1859,	1864
White, William P.,	Chicago, Ill.,	1865,	1866
Whitehead, Silas,	Lynchburg, Va.,	1856,	1858
Wilson, George C.,	Boston, Mass.,	1859,	1861
Wiseman, Charles,	Baltimore, Md.,	1856,	1862
Witzell, L.,	Cincinnati, O.,	1864,	1867
Wood, G. Davidge,	Baltimore, Md.,	1856,	1868
Woods, Samuel H.,	Boston, Mass.,	1859,	1869

LIST OF RESIGNATIONS.

Names.	Residence.	Elected.
Barr, Thomas H.,*	Terre Haute,	Indiana,
Dietzsch, Emil,*	Chicago,	Illinois,
Dixon, John,*	Wilmington,	Delaware,
Hinckley, George E.,†	San Francisco,	California,
Nichols, James R.,‡	Boston,	Massachusetts,

* Left the business.

† No reason given.

‡ Inability to attend the meetings.

LIST OF MEMBERS DROPPED FROM THE ROLL.

Names.	Residence.	Elected.
Allen, William S. N.,	Newport,	Rhode Island,
Atwood, William,	Portland,	Maine,
Blackwood, Crawford,	Mobile,	Alabama,
Breck, George,	Rochester,	New York,
Burrell, John,	Freeport,	Illinois,
*Canavan, John,	New York,	New York,
*Crandall, Thomas V.,	Highgate,	Vermont,
Dana, Edmund, Jr.,	Portland,	Maine,
D'Avignon, J. Eugene,	Montreal,	Canada,
Flynn, Michael,	New York,	New York,
Fritsch, Henry,	Cincinnati,	Ohio,
Gravesend, Raymond,	New York,	New York,
Guthrie, Charles B., M.D.,	Orange,	New Jersey,
*Houston, Eugene A.,	New York,	New York,
*Jeannot, George E.,	Johnstown,	Ohio,
Keith, William H.,	San Francisco,	California,
*Knowles, James S.,	Brooklyn,	New York,
Lackey, Ira,	Bloomington,	Illinois,
Landon, Alson,	Parma,	Michigan,
Leroy, Louis,	New York,	New York,
Morgan, James F.,	New York,	New York,
Morgan, Milton C.,	Pittsburg,	Pennsylvania,
Neynaber, Adolphus F. W.,	Philadelphia,	Pennsylvania,
Parkinson, Robert B.,	Philadelphia,	Pennsylvania,
Peck, Nathan F.,	Rockville,	Connecticut,
Reay, John W.,	New York,	New York,
Rees, Griffith,	Homestead,	Iowa,
Sackrider, Elijah W., M.D.,	Cleveland,	Ohio,
Samson, Almon,	Richmond,	Indiana,
Schanck, William F.,	Jersey City,	New Jersey,
Shalter, Uriah F.,	Lafayette,	Indiana,
*Smith, David L.,	Virginia City,	Nevada,
Sylvester, Samuel R.,	Washington,	District of Columbia,
Wilbur, Joshua G., M.D.,	Brooklyn,	New York,
Wills, Clayton N.,	Philadelphia,	Pennsylvania,
Zausinger, Gustavus A.,	Louisville,	Kentucky,

* Present residence unknown.

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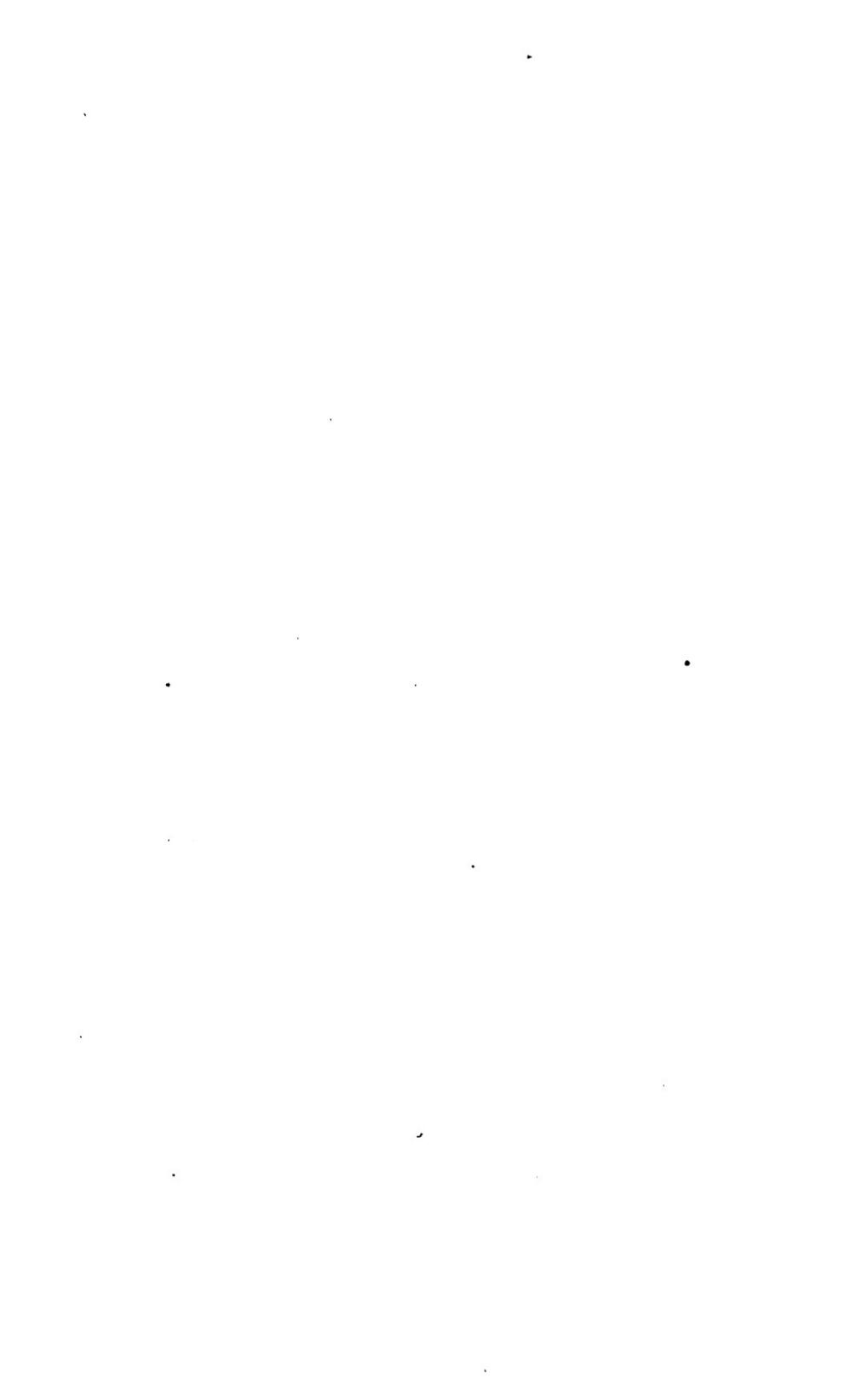
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		Though the Proceedings are not entirely free from errata, there are none but they may be readily cor- rected, except the following, which the editor regrets having overlooked: Page 287, lines 1 and 4 from below, read <i>Indium</i> instead of <i>Iridium</i> .	



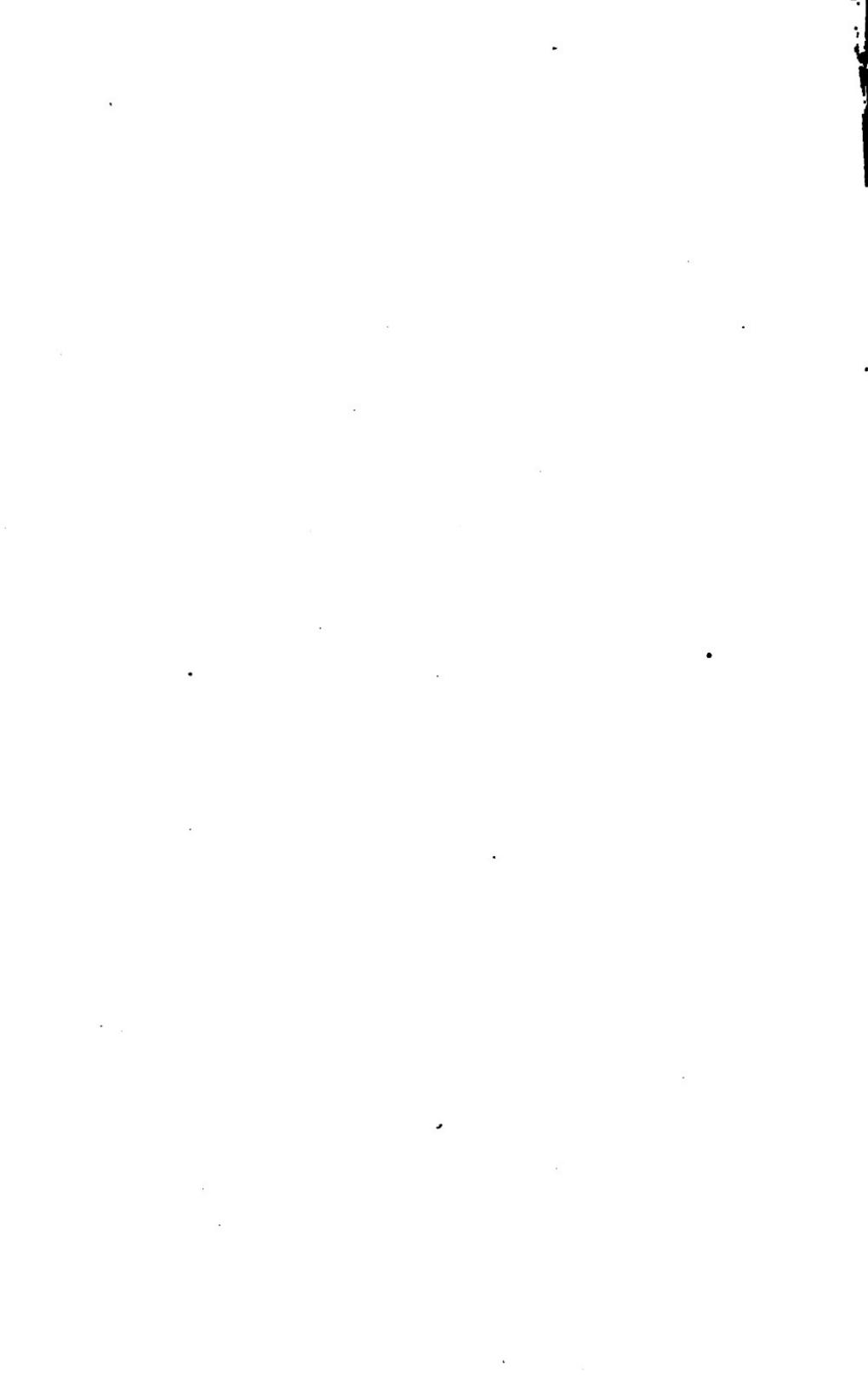






1 gal

259+



1 gal

259+